# The Newspaper of the Industry

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# GEORGE F. TAUBENECK Story of the Week Spring a Fallacy Was a Minute, Brother New Industries-No Startling Efficiency Are 'eople Working Harder? Where Do They Get That Stuff?

#### Story of the Week

To the Point

A forlorn youth plodded wearily into the Y.M.C.A. counsellor's office. "Have I got a problem!" he moaned. "What seems to be the difficulty?"

inquired the sympathetic older man. "Well, it all started back in my home town of Waukesha," began the young man. "Before I left there, I got engaged to a girl, and bought her an \$800 diamond ring."

"What's wrong with that?" asked the counsellor.

"Oh, nothin'," answered the harried youth. "But today I got this letter that says she hocked the ring and gave the money to one of her boy friends. Then he skips out, and leaves her in a family way.

"Yes, yes, continue," prodded the Y.M.C.A.'s "Mr. Anthony."

"She says in the letter that she's gained 125 lbs., and has a very bad case of acne."

"Tsk, tsk," tsked the frowning adviser.

"Besides that, her mother and father and seven brothers and sisters, who all hate me, are going to live with us," deplored the lad.

"What a situation!" agreed the counsellor. "What can I do to help

"You can tell me, sir," earnestly implored the youth, "if February is a good month to get married in."

# Spiking a Fallacy

Our seatmate on an air-passage flight to Kansas City folded his copy of The Nation.

Obviously he was ready to talk. And quite as obviously, he was 'gunning" for somebody.

As it turned out, that "somebody" was the apotheosis of the mythical corporate "powers" who—the leftwingers allege—control our incomes, our actions, our thoughts, and hopes.

"Why shouldn't the Big Monopolies grant a 25% increase to their workng-men?" he demanded, out of a

"What's a pittance like that to a mighty corporation which is now reaping the benefits of the tremendously increased technological efficiency stimulated by wartime research?"

"Everybody knows," he continued, "that new processes and new methods born out of war experience have made the average worker 70% more efficient. Why shouldn't the worker share in that gain?"

# Weit a Minute, Brother

"Where did you get that 70% figure?" we asked, mildly.

Wr ers for PM and The Nation have pro ed it."

That did it. We lost our temper. PM writers, indeed!

What have they proved?

When America's converted-to-war haustries were forced to turn out strange, extraordinarily high-tolerance items, their beginning efficiency was low, indeed.

In time, they learned how to produce lethal weapons at a greater

And so "labor productivity" staistics improved sharply, according o questionable government figures. (Concluded on Page 16, Column 3)

# Wage-Hr. Chief **Tells Rulings On Contractors**

NEW YORK CITY-The Wage and Hour and Public Contracts Divisions of the U.S. Department of Labor apparently believes that many forms installation and servicing of household and commercial refrigeration equipment, plus air conditioning, appear to be covered by the Wages & Hours Act, judging from statements made to AIR CONDITIONING & REFRIGERATION NEWS by L. Metcalfe Walling, national administrator of the divisions.

These statements resulted from a story in the Oct. 28 issue of the NEWS reporting that the Detroit branch of the U.S. office had informed a leading Detroit contractor that virtually all his employes were subject to the act and therefore were entitled to back pay for a period of four years based on time-and-a-half for work over 40 hours a week.

At the time, the contractor planned to take this decision to court. Since making its original decision, however, the Detroit Wage-Hour officials decided to study the case further and the status of this particular case now is uncertain. Meanwhile, as part of a change in his operations, this contractor has gone to a 40-hour week

'Two main grounds for coverage of such installation and servicing work exist under the Divisions' interpretation of the provisions of the act," declares Mr. Walling.

"As one basis for coverage, publicly announced as early as May 15, 1941, in release G-162, the Divisions expressed the view that employes engaged in the maintenance, repair, and reconstruction of premises used in the production of goods for commerce are engaged in a 'process or occupation necessary to the production' of such goods and therefore are within the coverage of the act.

"As you will note in paragraph IIIA of the above release, it is stated that among the operations included is work performed in connection with installing and maintaining refrigerating, air conditioning, and heating systems.

"This established position has been approved by a number of court decisions, including that of the Supreme Court of the United States in the recent case of Walling v. Roland Electrical Co., 326 U.S. 657, which held that the sale to and servicing of electrical equipment for industrial firms is an occupation necessary to the production of goods for interstate commerce," states Mr. Walling.

"As the court pointed out in the Roland Electrical case, it is not necessary that a particular occupation be indispensable to production, so long as the absence of such activities would 'handicap the production.'

"The Divisions have likewise considered to be within the coverage of the act, employes engaged in the maintenance, repair, and reconstruction of essential instrumentalities of commerce since such activities are so closely related to interstate commerce as to constitute a part thereof.

"Thus, for example, employes engaged in the installation or maintenance of an air conditioning unit in a railroad or bus terminal, in a telephone exchange, or other instrumentality of commerce would be engaged in commerce and therefore within the coverage of the act.

"A second basis for coverage," continues Mr. Walling, "under the Fair Labor Standards Act applicable to the situation in question exists where the installation and servicing is performed pursuant to an interstate contract of sale or while the goods are still in commerce. This basis of coverage is explained in Mr. Hermansen's letter to you."

[Mr. Walling here refers to a letter from Thomas A. Hermansen, manager of the Detroit branch of the (Concluded on Page 6, Column 1)

# Heating, Ventilating Show to Reveal 1947 Products of Over 300 Firms

# Cited as Need for '46 Unit Sales Dept. Store Heads

By George Hanning

NEW YORK CITY-If appliance departments in large department stores are not to lose to the tough competition from specialty stores, chain stores, furniture stores, and others, when the buyers' market sets in, top store executives must take an active interest in that department.

That point was cited as a prime factor in building maximum volume in major appliances and radios by several speakers at a session of the National Retail Dry Goods Association convention at Hotel Pennsylvania here last Thursday.

"Any department store desiring to can have a successful, profitable electric refrigerator sales operation," declared Dan A. Packard, household sales manager for Kelvinator, in a talk before the appliance session.

Ten important fundamentals are necessary for this success, he explained. These include: (1) senior executive interest, (2) the right kind of sales management, (3) the proper location of the department and proper displays of the merchandise, (4) steady promotion and (Concluded on Page 4, Column 3)

# Limit Is Raised for Non-Residential Type of Building

WASHINGTON, D. C .- The Civilian Production Administration is raising to \$50,000,000 its weekly rate of approvals for non-residential building, Major General Philip B. Fleming, Temporary Controls Administrator, announced Jan. 10.

"This action is made necessary in part by increased costs of construction during 1946, and because without the change it would not be possible in many instances to approve the added facilities which are required to furnish vital community (Concluded on Page 4, Column 5)

# **Laundromat** Price **Increase Announced**

PITTSBURGH - Higher manufacturing costs are causing some Westinghouse appliances to rise in price. Latest advance occurred in the Laundromat, which formerly sold for \$241.50. It now sells for \$269.95. Earlier Westinghouse had boosted prices on three models of electric ranges. The one formerly \$264, now sells at \$298.95; the second formerly \$174.50, now \$199.95; and the third formerly \$137.75, now \$147.95.

# Congress, Reserve Board **Discuss Easier Terms**

WASHINGTON, D. C .- An indication that The Federal Reserve Board may later ease credit restrictions in the field of consumer durable goods was given here last week.

In a letter to Rep. Philip J. Philbin (Mass. Democrat) S. R. Carpenter, secretary of the Board, stated that he and his associates are studying a proposal to key Regulation W to (Concluded on Page 4, Column 4)

# Appliance Interest Air Conditioning **Lagged Badly**

DETROIT-First returns are in on shipments of air conditioning and commercial refrigeration equipment for part of the year 1946, and from what can be determined from them. it is apparent that the industry fell rather short of the performance that was expected of it-but through no fault of its own.

The report is the Bureau of Census figures on air conditioning and commercial refrigeration shipments for the first six months of 1946. (A complete breakdown of the report is published on pages 22-25 of this issue). There seems to be no way of telling how complete the Bureau's report on industry shipments may be. The government agency says 71 manufacturers reported, and thinks that the report is quite complete. Individual manufacturers are divided in their opinion on this subject.

In one category the industry's performance-according to the Census figures—was rather startlingly good. That was in the case of condensing units, the report showing that 303,048 condensing units being shipped in the first half of 1946. (The question here is whether or not this may have included some units produced by independent condensing unit makers that went into household refrigerators).

Taking this figure at its face value, however, puts the manufacturer of condensing units in the light of producing and selling at a rate predicted

for them in the first postwar year. Here are some comparisons with both prewar performance and post-

war predictions.	
Census Report for	
6 Mos. of 1946	303,048
Entire Year, 1940	349,049
Chrysler Airtemp Survey For	
First Full Postwar Year	529,443
War Production Board Survey	
For First Postwar Year	998,000
The Census report on store	e and

room-type air conditioners, which may be more accurate in that there would be no factors likely to distort the figures, show how lack of mateand labor troubles tended to hold back production.

Here are the figures and comparisons on store conditioners: Census Report for Entire Year, 1941 . . . . . 6,043
Chrysler Airtemp Survey For
First Full Postwar Year\* . . . 24,500 WPB Survey For First Postwar Year's Requirements ... 23,814

\*All 1½ hp. and larger packaged conditioners, for both household and residential

On room-type air conditioners (presumably 1 hp. and less, although this is not specified) performance was the saddest.

Here are the figures: Census Report for 6 Mos. of 1946 ... 
 Entire Year, 1941
 30,000

 Chrysler Airtemp Survey For First Full Postwar Year
 55,000

# David Fiske Resigns As ASRE Secretary

NEW YORK CITY - David L. Fiske has resigned as national secretary of the American Society of Refrigerating Engineers, the resignation being effective immediately.

Mr. Fiske had been secretary of the Society since 1926. No announcement was made of his future plans, although it is believed that he will stay in the industry. The A.S.R.E. Council will select the new secretary.

CLEVELAND-More than 300 exhibitors will display their latest products when the Seventh International Heating & Ventilating Exposition opens its doors at Lakeside Hall here next Monday, Jan. 27, for a five-day showing.

The first since 1940, this exposition is sponsored by the American Society of Heating & Ventilating Engineers, which will hold its fifty-third annual meeting at the Statler hotel here concurrently with the show. In addition to this convention, the thirty-third annual meeting of the National Warm Air Heating & Air Conditioning Association will take place the same week, on Jan. 29 and 30 at the Cleveland hotel.

The exposition is expected to show for the first time many of the new products developed during the war and since. Although the exhibits will be largely confined to heating and winter air conditioning, there will be a fair number showing vear-around air conditioning lines and related equipment.

(A complete list of exhibitors and a diagram indicating booth locations appears on pages 14 and 15 of this issue, while detailed descriptions of several exhibitors' display plans are published on page 17.)

Attendance at the exposition will be limited to those having a bona

**Exposition Hours** Mon., Jan. 27-2 p.m. to 10:30 p.m.

Tues., Jan. 28-12 noon to 10:30 p.m. Wed., Jan. 29-12 noon to 10:30 p.m. Thurs., Jan. 30-12 noon to 10:30 p.m. Fri., Jan. 31—12 pion to 6 p.m.

fide interest, such as "those who are concerned with the purchase, instal-lation, use, and sale of neeting, ventilating, and air conditioning equipment," states the exposition states the exposition management. All visitors will have to register.

To facilitate registration, visitors are advised to obtain and fill out "advance registration cards," which exhibitors have available. Readers of AIR CONDITIONING & REFRIGERATION NEWS may obtain these cards by writing to the NEWS.

A broad program of events has been mapped out for the meetings of (Concluded on Back Page, Column 1.

# **United Association to** Recognize N.A.R.C. as An Employers' Group

WASHINGTON, D. C .- The meeting Jan. 6-7 at the Statler hotel here between the United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada, and the National Association of Refrigeration Contractors, wherein problems of mutual interest pertaining to the refrigeration industry discussed, resulted in the United Association recognizing the N.A.R.C. as a national association representing the refrigeration contractors.

It was agreed, according to an "official" report of the conference, that the two associations will work closely together on all matters of mutual interest when legally possible. These matters will include the training of apprentices and journeymen employed in the refrigeration industry.

Future meetings will be held by representatives of both organizations for the purpose of making a further (Concluded on Page 4, Column 5)

# \$1,000,000 Worth of Refrigeration, Air Conditioning Set for Omaha Hotels Detroit Plant Soon

planning air conditioning projects and addition of refrigeration equipment to food service departments in 1947 that will total well over \$1,000,000, according to C. E. Heaney, secretary of the Omaha Hotel Asso-

One of the largest projects is that of the Hill Hotel, managed by Sam Josephson, which recently purchased an adjoining building and is rebuilding the structure to house the hotel kitchen. It will have terra cotta walls, quarry tile floors, and stainless steel equipment. Considerable new refrigeration equipment, including walk-in boxes, will be installed for meats, poultry, dairy products, and vegetables.

New kitchen refrigeration units to be installed at the Omaha Athletic Club by J. C. Allgaier, Sr., to cost \$15,000. Extension of air conditioning also is being planned.

F. X. Cahill, manager of the Paxton Hotel, will install new air conditioning equipment in the hotel coffee shop. A new air conditioning plant also is on the agenda of improvements for the Conant-Sanford Hotel, according to Harley Conant.

New bar equipment including refrigeration units is being installed in the redecorated Elks Club Hotel managed by Zola Lang.

One hundred rooms will be modernized at the Castle Hotel, according to Manager H. A. Papineau, and the coffee shop enlarged, along with

addition of a new bar room. All public space will be air conditioned.

The Blackstone Hotel will include additional air conditioning, relocation, and refurnishing of public space and modernization of guest rooms, in a five-year improvement program. The coffee shop and bar are being air conditioned at the Lee Hotel, in addition to a general reconditioning program.

Recent completion of its new, air conditioned inn capped a five-year rehabilitation program at the Regis

# 4 Pappas Bros. Establish New Refrigeration Firm In Houston

HOUSTON, Tex.-The Pappas Refrigerating Co. has been established here at 602 Louisiana by four Houston brothers.

The brothers are James H. Pappas, who before the war was with the Zero Plate Commercial Refrigerating Co.; Tom Pappas, George Pappas, Pete Pappas. Three of the brothers served in the Army Air Forces and the other in the infantry.

#### Scott to Sell on 2 Levels

PATERSON, N. J. - Charles E. Walker has filed trade name to deal as The Walker-Scott Co., 601 Main St. The company will sell air conditioning, refrigerators, and general appliances at wholesale and retail.

# American Thermal Even Politicians Will Work Longer Will Move Into New

DETROIT-American Thermal Industries, Inc., manufacturer of Ameri-therm and Amtico package air conditioners, is preparing to move into its new plant at 440 Illinois Ave. here, in the near future, company officials have announced.

The new plant, with its 20,000 sq. ft. of floor space, will house continuous production lines for degreasing, rustproofing, painting, and finishing air conditioning units.

The greatly increased space over present facilities at 2501 Bellevue Ave. here, will permit installations of the most modern equipment for the fabrication, finishing, and testing of refrigeration, heating, and ventilating equipment, according to a company spokesman.

The company is now producing Ameri-therm air conditioners of 3 to 15 tons capacity at the rate of 15 per day, it is said. Units with 3 to 7½-tons capacity are now available for delivery.

With its expanded facilities, American Thermal Industries is prepared to take on additional dealers, distributors, and manufacturers' agents, the company spokesman said.

Eastern distributor of the company's products is Controld-Temp Equipment Sales Co. of New York City. Melvin Pine & Co. handles the firm's exports.

The company is said to be geared up to produce in excess of 15 package air conditioners per day.

# Air Conditioning Enables Congressmen To Do a Better Job During Hot Sessions

WASHINGTON, D. C .- Announcement recently that the Senate and House chambers of the United States Capitol are to be completely modernized prior to January, 1948, with new ceilings and new systems of lighting, acoustic equipment, and air conditioning, brings into focus again the effect of improved working conditions on legislative activity in Wash-

The Capitol has now been completely air conditioned for the last eight years, or since 1938, and it is regarded as more than a coincidence that Congress has carried its sessions into August, or later months, every year since 1938, although the traditional adjournment date in earlier times was not later than June, when the heat wave usually settles over Washington.

Some attribute the long sessions of the last eight years to international complications and war. Others feel they have been due partly to the recent legislative tendency to pass emergency legislation of limited tenure, which must be studied periodically and either reenacted or abandoned.

Still others see a much simpler explanation, which is that industrial and scientific advances have come to the aid of forensic discourse. It is that air conditioning as introduced into the Senate and House chambers, the Congressional office buildings, and finally the entire Capitol, has made the Capitol and its environs habitable during the summer months.

Congress can remain on the job in comparative comfort, and consequently does. Eggs may be fried in accordance with custom on the sidewalks outside, but the humidity is squeezed from the inside atmosphere and the sun's heat is not permitted to add to the warmth of the debates.

The fact is that in the 157 years since the American Congress first convened, it has been in session more than 300 days in only 15 of those 157 years, and among these 15 are the last six completed years, the period from 1940 to 1945, inclusive. One Congress, the 76th, taking advantage of Leap Year, managed to extend a session through 366 days, a record that may never be duplicated. It remained in session from Jan. 3, 1940 to Jan. 3, 1941, although only 363 days of the session were in a single year of 1940.

Contrasted with the last six years, each with Congress on the job for a longer period than 300 days, are the 150 years between the first session in New York City, March 4, 1789, and 1939, when the late summer sessions became the established pattern. In this 150 year period, there were only nine years in which Congress was in session more than 300 days.

Possibly the advent of air conditioning is not an important factor. But such a statement lacks persuasiveness, when one looks at the record of the sessions since it was installed. Some of the represen atives of the air conditioning indus ry think it is an improvement in wo king conditions which has mide feasible the continuous function ag of Congress during the recent critical

Older Washington residents reall how the arrival of summer was announced in the Senate by the appe rance of big palm leaf fans, and bo is of lemonade in the cloakrooms, and by admonitions from Senators A drich, Allison, and Hale, who w re guiding most of the legislation of an earlier generation, that the Senators would have to attend diligently to he business at hand in order that Congress could get away.

Various efforts were made in earlier days at cooling and circulating the air in the Senate and House chambers. Electric fans were placed overhead, but correspondents in the press galleries objected that they blew the note paper and made reporting difficult. Subsequently, air intakes with suction fans were established outside of the Capitol building and the air was introduced through floor gratings in House and Senate.

Exhaust fans drew the air out through the ceilings. While this gave fresh air, it did not improve the temperature or humidity of the outside atmosphere and was not regarded as a substitute for the palm leaf fan. At the White House, President Taft tried to solve the problem by putting an electric fan behind a cake of ice in the hot air duct, a recourse used also at times for the House chamber. Many thought it added to the stickiness of the atmosphere.

Air conditioning was begun in the House chamber in 1929 and the Capitol project was finished nine years later, making the Capitol undoubtedly the largest completely air conditioned building in the world. One of the early estimates, made by Dr. George Calver, the Capitol physician, was that operation of the new air conditioning system in the Capitol and the three office buildings had reduced colds among the members by

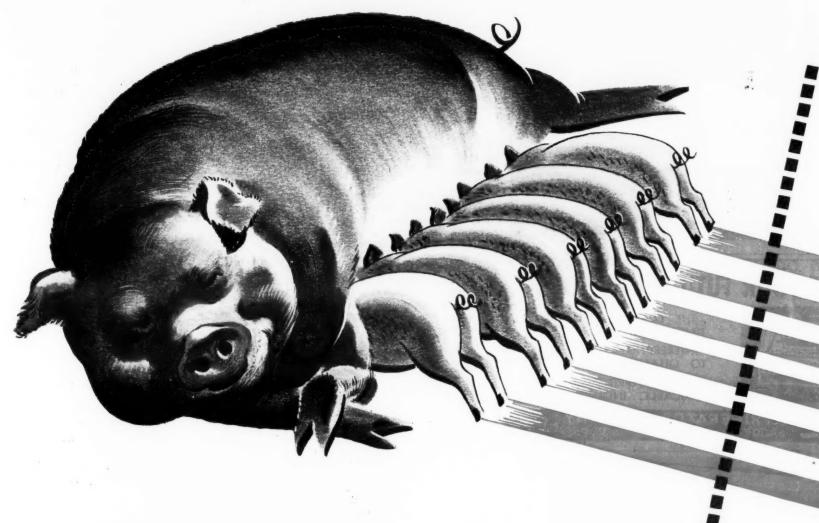
Whether or not the longer sessions of Congress are attributable to technological advances in indoor climate control, it is certain that air conditioning has enabled the national legislators to function efficiently and without the complaints which always attended the sessions that extended beyond early June.

Such advantages as have come from air conditioning at the Capitol have now been extended to numerous other departments in Washington.

It is anticipated by representatives of the air conditioning industry that eventually most public buildings of the country will be air conditioned in the interests of the health and efficiency of public officials and employes.







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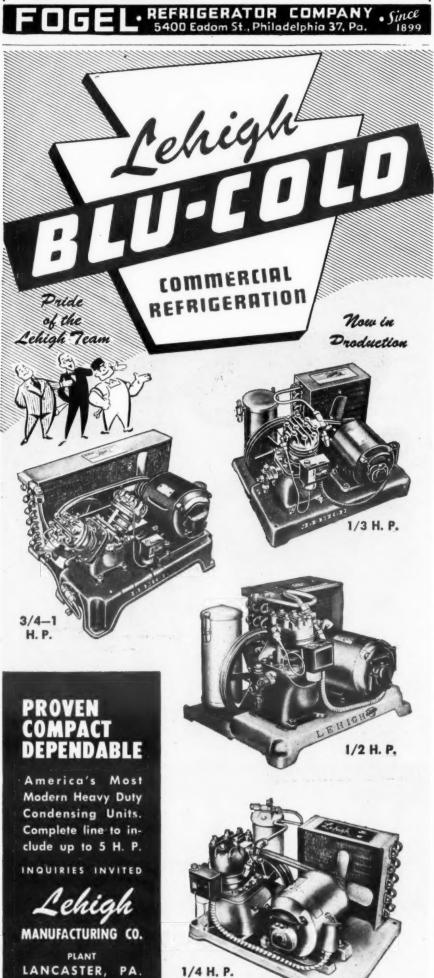






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A FEW TERRITORIES STILL AVAILABLE. INQUIRE TODAYI



# Dept. Stores --

(Concluded from Page 1, Column 3) advertising, (5) concentration of effort,

(6) The right kind of sales organization, (7) creative selling, (8) adequate and competitive sales financing support, (9) adequate service facilities, and (10) activity in the replacement market.

Of these fundamentals, Mr. Packard placed considerable emphasis on the replacement factor, pointing out to the department store men that "the day is now, or will soon be, past when you can expect to do a sizeable refrigeration volume without dealing with a replacement buyer."

Predicting that the refrigerator market for the next four years will total some 20,000,000 units, he expects 12,000,000 will be replacement buyers and 8,000,000 first-time buy-

"What will become of the 12,000,-000 replacement refrigerators? Just guessing, we feel that 4,000,000 of these may be reconditioned and resold. Another million may be kept by their present owners as second refrigerators. Allowing 500,000 as a reasonable nation-wide inventory of used refrigerators, this leaves 6,500,-000 used refrigerators to be disposed of either by the owner or the dealer," said Mr. Packard.

#### KEEP THE OLD UNIT

"The more used refrigerators you fix up and resell the fewer new refrigerators you are going to be able to sell," he cautioned, adding that "the more you can encourage owners to keep their old refrigerator as a second unit by showing that it has more value to them in this manner than it does on the trade-in market, the fewer old refrigerators you will have to pass through your inventory. The important thing-don't let used refrigerators pile up in your warehouses.'

Recounting the experience of the automotive field with used cars, Mr. Packard told the NRDGA members the conclusion reached by one automobile expert: "The real lesson to be learned from the experience of the motor industry is that the trade-in operation is a basic part of the business and that it should be treated as such and not as a sporadic ailment that can be cured by liberal doses of panaceas."

John M. Otter, sales manager of the radio and television division of Philco, outlined the benefits to department stores who sell national "brand" products. He asserted that brand products give prestige to a department store and draw customers through its stores. He declared that brand products have to be quality products and the manufacturers have to stand behind them.

The time is rapidly coming, he added, when time payments are going to be a big factor in appliance selling. He saw no reason why department stores should not offer freer terms to meet the terms offered by furniture stores and others when the buyers' market sets in.

Herman C. Price, vice president of Kalamazoo Stove & Furniture Co. and formerly manager of the major appliance division of Sears, Roebuck & Co., promoted the case for "private brand" appliances. He asserted that in addition to controlled distribution and concentrated purchasing power, department stores need "creative specification buying" to "meet the standards set by large chain stores in appliance merchandising." The latter factor means that the merchandiser actually dominates the manufacturing branch, "supervising production design, engineering, costs, and factory layout."

# Easier Terms --

(Concluded from Page 1, Column 3) meet fluctuations in supply and demand.

[NEWS readers will recall that changes made in the Regulation last December released most types of goods from its provisions with the exception of durables, such as refrigerators and automobiles.]

The flood of complaints from manufacturers of durable goods following this move prompted Rep. Philbin to inquire of the Board whether Regulation W might not be liberalized. As suggested by the Congressman, the plan called for a down payment of 10% and the balance in instalment payments over a 24-month period.

Here in part is the Board's recent reply to Rep. Philbin's letter:

". . . As you know, the potential demand for durables . . . has been very large, while supplies from current production . . . have been in-adequate. It has been one of the principal objects of the regulation to contribute to a better balance in supply and demand by keeping effective demand under some restraint. . . .

"We cannot say at this time when terms such as those mentioned in your letter (10% down and 24 months to pay the balance) would be appropriate. In varying the terms of the regulation, the Board would be influenced by a number of factors which would include the general level of economic activity, the distribution of activity as between durables and other things, the price level and its movement, the volume of credit, and the rate and direction of movement in that volume, public holdings of liquid assets, and other similar matters."

# **Building Limit--**

(Concluded from Page 1, Column 3) needs in connection with new housing developments," General Fleming said,

"These changes are being made only after thorough discussion with all other government agencies involved and, in view of the improved building materials supply, will have little or no impact on housing construction. There will be no other relaxation of the limitations on construction embodied in Veterans' Housing Program Order 1 (VHP-1) at this time, and authorizations must be obtained under the order just as before," he said.

# To Recognize NARC--

(Concluded from Page 1, Column 5) study of conditions in the industry in order to make recommendations that will create better labor relations.

Present at the Jan. 6-7 meeting representing the N.A.R.C. were:

Warren W. Farr, Cleveland, president; Ed. S. Wright, Youngstown, first vice president; Raymond Shock, Detroit, co-chairman, Labor Relations Committee; Robert Weston, Pittsburgh, member, Labor Relations Committee; Lee Quinn, Cincinnati, member, Labor Relations Committee.

Representing the United Association were: Martin P. Durkin, general president; Robert F. Lynch, Jersey City, N. J., labor relations committee member; John J. McCartin, Washington, D. C., general organizer; J. W. Harbaugh, Washington, D. C., special representative; C. F. Voss, Washington, D. C., special representative.

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Write for full details on this revolutionary control today. No other control assures so much versatility, simplicity, efficiency and dependability. Penn Electric Switch Co., Goshen, Ind. Export Division: 13 E. 40th St., New York 16, U.S.A. In Canada: Penn Controls, Ltd., Toronto, Ont.

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★ Large block assembly with terminals molded internally for strength and permanency.

\* Modern, attractive, high tensile strength plastic



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side the where th Masland stant 75 and 65%

# On Firm Price Basis

HARRISON, N. J. - Products of Pump & Machinery Worthington here, with a few exceptions, been placed on a firm price Clarence A. Searle, president, has announced.

s means, according to Mr. Searle, that prices quoted when an order is placed will not be subsequently increased.

Exceptions to this policy are made major purchased components, such as motors and other electrical equipment, where Worthington will similar price protection as is red by its supplier, Mr. Searle requi

Two subsidiaries, especially dependent upon copper and steel plate, will not follow the firm price policy until they can procure their requirements with reasonable assurance of no additional cost increases, he added.

# Westinghouse Conditioning Line Is Taken on by Barker, Goldman & Lubin

SPRINGFIELD, Ill. - Barker, Goldman & Lubin Co., lumber retailers, 300 North Ninth St., is now offering a complete Westinghouse air conditioning service.

Heading the air conditioning department is Herschel A. Stults as manager. Mr. Stults is a licensed

Edward L. Pruitt is the manager of the heating and sheet metal department.

The company lists the following projects underway and projects recently completed: St. Nicholas Hotel, Kay Jewelry Co., Allis-Chalmers Mfg. Co., S. A. Barker Co., Mill Tav-Paul Tick Liquor Co., Illinois Foundry, and the Legislative Chambers, State of Illinois.

# Crown Refrigerator Co. Buys Patterns, Patents Of Bilt-Rite Products

METUCHEN, N. J.-Crown Refrigerator Corp., manufacturer of home and farm freezers and commercial refrigeration here, has purchased all patterns and patents of the Bilt-Rite Refrigeration Products Corp., H. Green, treasurer announced recently.

# Worthington to Quote Packer, Ice Cream Firm Adding Refrigeration

OMAHA, Neb. - Two commercial refrigeration installations are getting underway in Nebraska, the largest being that of the Union Packing Co. of Omaha which was capitalized recently at \$100,000, with Carl Frohm as president; Edward Frohm, vice president; and Harold Siegel, secretary-treasurer. At Holdrege, the Holdrege Ice Cream Co. has announced plans to erect a \$9,200 building for the manufacture of ice

The Omaha corporation is building a packing plant at 4501 S. 36th St., with complete cold storage facilities, and expects to be in operation this coming April. Officers of the corporation now are engaged in the wholesale distribution of meat in

# **Water Cooler Standards** Are Effective Feb. 1

WASHINGTON, D. C .- New commercial standards covering the production of self-contained mechanically refrigerated drinking water coolers will go into effect Feb. 1, announces F. E. Powell of the National Bureau of Standards, U. S. Department of Commerce.

Originally it was planned to become effective six months after the official end of hostilities, but the water cooler industry recently informed the Commerce department that it wished the new standards (designated as CS127-45) to apply as early as possible to 1947 production of the coolers, explained Mr.

# Trane Air Conditioning Class Nears Completion

LA CROSSE, Wis. - Trane Co. here, manufacturer of heating, cooling, and air conditioning equipment, has just announced that its first postwar student class for engineers is nearing completion.

A six-month class for graduate designed to give the engineers, students a knowledge of the Trane products and how they can be used, the course started in July, 1946.

At the same time the company announces that plans are being laid to expand facilities for future classes.

# 3-Ton Packaged Unit Assures Weaver Constant Conditions for Testing Rug and Carpet Fabrics

CARLISLE, Pa. — To maintain standard atmospheric conditions necessary in fabric testing so that conditions of each test are duplicated from day to day, C. H. Masland & Sons, weavers of rugs and carpets employs a Chrysler Airtemp model 3-SCD packaged air conditioning unit, according to C. H. nd II, vice president.

The conditioner is located just outside the standard conditioning room, where the tests are conducted, Mr. Masland says. It maintains a constant 75° F. dry bulb temperature and 65% relative humidity, he adds.

The standard conditioning room is said to be approximately 33 x 18 x 91/2 ft. Well insulated against heat leakage, wall construction consists of 4 in. of 100% fire clay tile, a ½ in. air space, and 3 in. of foam glass insulation. The ceiling consists of 1/2 in. of transite, 3 in. of foam glass insulation, a 3 in, air space, and 3 in, of concrete. The floor is 5 in. of concrete laid on the ground.

Conditioned air is supplied to the room through ceiling ductwork and two diffusers. Return air comes to the air conditioner through a grille in the wall.

# SALES ENGINEER

High caliber air conditioning sales engineer of proven ability to handle sales in Mid West territory on self-contained air conditioning units. Must have car and be free to travel most of the time after factory training. Permanent position. Excellent opportunity for right man.

Send recent photograph and comprehensive outline of background and experience indicating previous earnings.

ICE AIR CONDITIONING CO., INC. 794 UNION STREET BROOKLYN 15, N.Y.

ince 1905, in industries dependent on refrigeration "BAKER" has always meant compressors, the finest in refrigeration equipment. For instance, in bakeries, a refrigeration compressor is as important in bread making as an needs controlled, cool Flour oven. storage. Other ingredients, such as yeast, all some shortenings and eggs milk, must be refrigerated. Mixing water must be cooled. Mixers must be refrigerated. Proofing and fermentation require accurate control. "Retarding" temperature and humidity insures oven fresh products, prevents waste. Bread must be quickly cooled after baking. Other processes require humidity control. Refrigeration seals bread wrappers. Frozen bread stays fresh up to ninety days. Modern bakery shops are air ditioned. "BAKER" refrigeration compressors help bake bread Ice Machine Co., Inc., with factories at Omaha, Neb., and South Windham, Me.

# Wage-Hour Law as Applied To Contractor--

(Concluded from Page 1)

wage and hours divisions, which was published in the Oct. 28 issue of the NEWS. This opinion stated, essentially, that where goods originated out of state, any servicing performed on them during the warranty period set up by the out-of-state manufacturer would be covered by the act.]

"The position expressed in this letter is not a new position, as suggested in the article in question, it having been set forth in a legal field letter issued April 20, 1942, for the use of the Divisions' personnel. The views therein expressed were subsequently affirmed in two opinions which were released to the labor law services in 1942 for public circulation. (See 5 Wage Hour Reporter, pp. 553 and 789.)

"The only modification in this position," explains Mr. Walling, "was that made necessary by the Supreme Court's decision of Jan. 18, 1942, in Walling v. Jacksonville Paper Co., 317 U.S. 564. Thus, you will note Mr. Hermansen's letter, paraphrasing the views expressed in 1942, states that coverage will exist where the employe is installing equipment sold 'after being received directly from other states.'

"Following the principles of the Jacksonville decision, where the goods were not sold pursuant to an interstate contract of sale and where the sole basis for coverage is that the goods were installed after being received from another state, the Divisions would not regard coverage to exist unless there was a 'practical continuity of movement' of the goods.

"The article in question suggests that the views expressed in Mr. Hermansen's letter constitute a reversal of an opinion given two years ago wherein it was stated that installation and service work is covered in a factory producing for interstate commerce.

[Here Mr. Walling refers to the statement of a Detroit attorney in the Oct. 28 issue of the NEWS that two years ago "it was decided by the wage-hour division, at least in Detroit, that the only refrigeration installation and service work covered by the act was that performed in an establishment obviously engaged in interstate commerce, such as a large automobile factory."]

"I am not sure I know the particular opinion you have in mind as being issued two years ago," admits Mr. Walling. "However, there is no inconsistency between the two opinions, since they involve different bases of coverage.

"The basis of coverage in the opinion which you state was given two years ago is that expressed in paragraph IIIA of release G-162, explained above. The basis of coverage in Mr. Hermansen's letter is that set forth in the opinion of April, 1942.

"That there is no inconsistency between these two opinions is clear from the earlier opinion on which Mr. Hermansen's letter was based," avers Mr. Walling. "After explaining the possibilities of coverage where an employe is installing or servicing equipment pursuant to an interstate contract of sale or where the equipment has been received from another state, the earlier opinion continues (this portion was not

referred to in Mr. Hermansen's letter) as follows:

"'Likewise, an employe would be covered if his servicing operations were properly to be regarded as the maintenance or repair of an essential instrumentality of commerce, or of buildings or machinery used to produce goods for commerce. . . .

"There is also a reference in the article to a distinction between household work and commercial work, with a suggestion that the former is not within the coverage of the act," continues Mr. Walling.

"Ordinarily, installation or servicing of equipment for firms engaged in the production of goods for interstate commerce would be within the coverage of the act on the ground that such work is necessary to the production of goods for interstate commerce.

"However, it does not necessarily follow that household installations or servicing is not within the coverage of the act," he emphasizes. "As pointed out above, such work may be covered when performed pursuant to an interstate contract of sale. Such work may likewise be covered where the goods are still 'in commerce,' within the meaning of the Jacksonville case.

"In discussing the exemption from the act's minimum wage and over. time requirements for retail and service establishments under section 13(a)(2), the statement is made that employes working on household re. frigeration service are exempt from the act,' adds Mr. Walling.

[Section 13(a)(2) of the Fair Labor Standards Act is included under the heading "Exemptions" and reads as follows: "any employe engaged in any retail or service establishment the greater part of whose selling or servicing is in intrastate commerce."]

"This statement is not entirely ac. curate. The 13(a)(2) exemption is primarily an establishment exemp. tion. Thus, if a particular establish. ment does not qualify for the exemp. tion because it performs a substartial amount of non-retail servicing, none of the employes in the establishment would qualify for the exemption.

"Consequently, if a particular employe of such an establishment performed some covered work during a particular workweek, he would be entitled to the benefits of the act even though most of his time was devoted to household refrigeration

"It should also be noted that the section 13(a)(2) exemption is applicable only to employes 'engaged in' a retail or service establishment. Accordingly, even though an establishment may be considered a retail or service establishment, within the meaning of the exemption, unless a particular employe regularly performs some work in the establishment he would not be exempt.

"Of course," states Mr. Walling, "the fact that an employe is not exempt under section 13(a)(2) does not necessarily mean that the act's minimum wage and overtime provisions are applicable to him, since the question of exemption has to be considered only where an employe is otherwise performing work which is within the coverage of the act.

"In the last column of the article, third paragraph from the end, there is a quotation from . . . the National Association of Refrigeration Contractors to the effect that the Divisions may have gone 'rather far afield' in interpreting the act with respect to 'service establishments whose business is mostly commercial in nature, mostly intrastate, and for the most part firms whose business is intrastate.'

"In this connection," points out Mr. Walling, "it may interest you to know that the Supreme Court of the United States in Walling v. Roland Electrical Co., referred to above, has held that an establishment which is mainly engaged in performing work for industrial and commercial firms is not the type of establishment which Congress in tended to exempt under section



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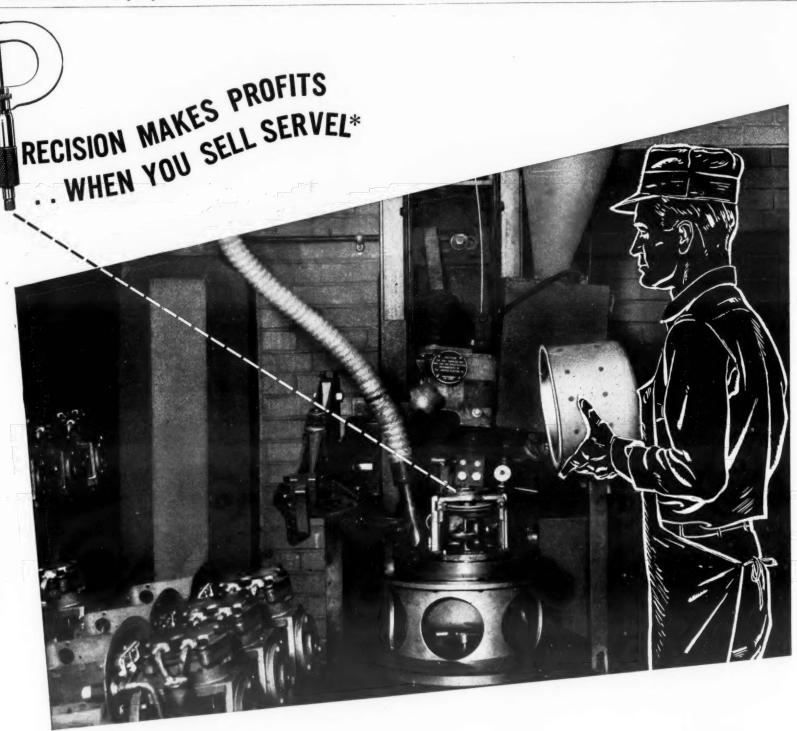


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This air-tight "package of power" occupies little more space than a standard motor. It has no belts to adjust, no shaft seal to leak, and requires no oiling. Thus service costs are kept to a minimum. Dealers and fixture manufacturers are assured of maximum profits and complete customer satisfaction on every sale.

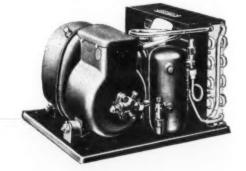
Learn the complete story behind this carefully engineered, modern condensing unit. Write today for Servel's booklet, "Servel Supermetic." Address Servel, Inc., Division RN, Evansville 20, Indiana.

\*Servel's new "Supermetic" condensing units serve dealers and fixture manufacturers in every vital field

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6. ROOM COOLERS

9. INDUSTRIAL COOLING 10. VEHICLE REFRIGERATION



eruel Inc. evansville 20, IND.

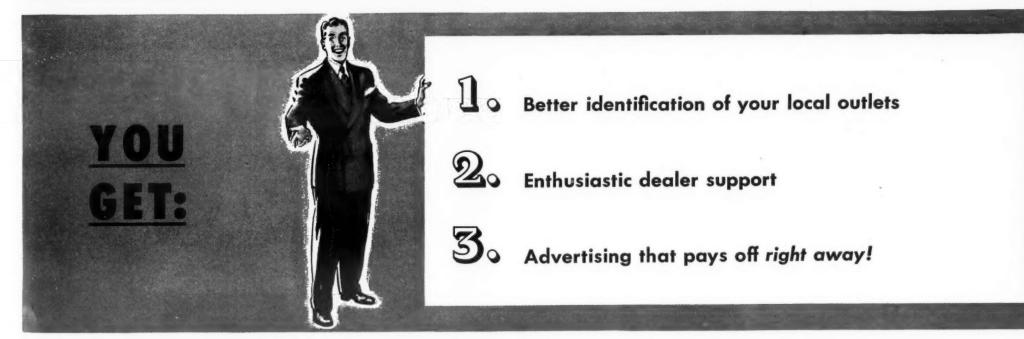
This is one in a series of advertisements featuring the scores of new machine tools and processes now being used to produce Servel Supermetics. Reprints are available to dealers individually or in sets as series progresses.

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You can reach 63.4% of the \$414,757,552 home appliance volume in the Great Chicago Market when you place your message before Tribune-reading families. Tribune rates per line per 100,000 circulation are among the lowest in America.

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# How Carbon Panels Can Be Used to Improve 'Ventilation' with Unit Air Conditioners

By Henry Sleik, Vice President, W. B. Connor Engineering Corp.

Insufficient fresh air ventilation, high outdoor air requirements, and inaccessibility of outdoor air, frequent handicaps of unitary store-type air conditioners, can often be overcome through the application of activated carbon air recovery. Present crowded conditions usually mean that the design loads are far exceeded and even in instances where greater capacity is available the remoteness of the outside air supply requires extensive and costly duct-

Then again, it is sometimes physically impossible to gain access to a source of fresh pure air. These are all conditions that are readily remedied by activated carbon air recovery—the conversion of recirculated indoor air to its original freshness.

Proper ventilation may be described as the volume of fresh, clean air necessary to maintain an agreeable and odor-free atmosphere within a conditioned space. A popular fallacy is the belief that oxygen imparts freshness to air and that large volumes of air are needed to supply such oxygen.

Stale, stuffy air is caused not by lack of oxygen but by odors-just plain smells that originate from occupants and their habits (body, respiratory, tobacco, and cosmetic emanations), and from food and beverages being prepared and served.

The minimum outside air mandatory in any air conditioning system, in other words, that required merely to pressurize the conditioned zone against infiltration, is invariably more than ample for adequate oxygen replenishment.

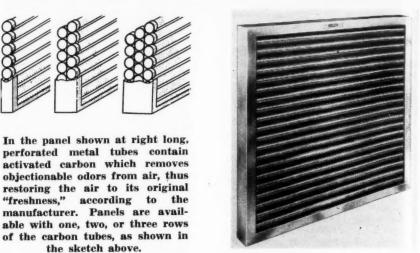
It has, in fact, long been established that in any above-ground structure, regardless of construction or nature of occupancy, adequate oxygen supply is insured through unadvoidable outdoor air infiltration or from the outdoor air mechanically supplied to counteract infiltration. This minimum air volume is not, however, sufficient to dilute the odors and vaporous impurities which usually accumulate in occupied areas.

It is for this reason that ventilation generally demands many times the air volume required merely for oxygen replenishment. Since this dilution function requires only fresh not new air, it can be obtained through the purification of recirculated air. And as recirculated air is already at the desired room temperature and humidity, its conversion to fresh air eliminates and thus saves the conditioning required by using new outdoor air.

Ventilation of fresh air requirements vary with the nature and function of the space, the type and number of its occupants, their habits and activity, in short, with the rate and degree of odor generation. The ventilation requirement for a crowded night club will, of necessity, be relatively greater than for a sparsely tenanted office.

Space per occupant is a vital factor in the consideration of proper ventilation. Table 1 indicates the recommended volumes of fresh air per person for various types of space and density of occupancy.

While the number of occupants and



Carbon Panels as Designed for Conditioners

their metabolism is, of course, taken into account by the air conditioning engineer in his computation of heat loads, the effect of space per occupant upon the ventilation factor is not always appreciated.

The concentration of odors in the atmosphere surrounding the occupant therefore varies inversely with the volume of the space occupied. This means that in order to maintain as favorable an atmospheric quality in a densely occupied area as in a sparsely occupied one, the odor dilution rate must be increased in proportion to the reduction of the space per occupant.

These recommended fresh air volumes, although the result of experience, are not generally provided, which accounts for the poor air quality in many otherwise welldesigned air conditioning systems. Sometimes, as in the case of railway cars and airplanes, equipment space, weight, and power limitations compel compromise rather than ideal ventilation standards. More often, however, cost is the only barrier to

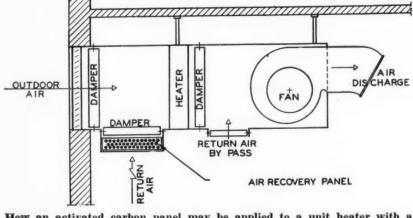
adequate ventilation. The application of activated carbon air recovery overcomes this obstacle.

The solution of the problem of improving air quality in railroad cars provides an apt illustration of overcoming the condition of insufficient fresh air ventilation. A railroad train duplicates, in a concentrated way, practically every condition of human environment. As each car must carry its own individual system, a railroad train is, in effect, a series of unitary systems, on an average of 7½ ton capacity.

The ventilation problem of the average train is complicated by the abnormally dense occupancy and corresponding high concentration of accumulated odors. Even industrial odors are encountered because the outdoor air intake picks up oil and combustion fumes, and other contaminants. Sometimes in club or lounge cars more than 50 persons, smoking and drinking, gather in a car designed for a normal occupancy of 22 to 24 passengers.

(Concluded on next page)

Fresh Air



How an activated carbon panel may be applied to a unit heater with a housed-type fan is shown above.

# HERE IT IS! the New TO SEE THE

THE MOST PERFECT FILTER-DEHYDRATOR EVER DEVELOPED

- The unique construction of the Sporlan Catch-All provides effective moisture and dirt elimination in refrigeration systems.
- The drying agent of the Sporlan Catch-All unlike other drying agents is a moulded porous cylinder which both dehydrates and filters . . .

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The Sporlan Catch-All will reduce the moisture content in an average installation with Freon, Methyl Chloride or Sulfur Dioxide refrigerant to at least 40% below accepted commercial standards! The Sporlan Catch-All will catch all scale, solder particles, carbon, sludge, dirt or any other foreign matter as minute as 9 microns

with negligible pressure drop!

#### Table 1—Recommended Fresh Air Requirements

.*	Cubic Feet	Generally Required To Maintain an Odor-Free Atmosphere		
Space	Per Person	CFM per Person*		
Private Office or Home	1,000 and over	15		
General Office or Apartment	500 to 700	15		
Conference Room or Game Room	250 to 300	30		
Average Specialty Store	400 to 500	15		
Department Store	300 to 400	15		
Bargain Basement	200 to 250	25		
Restaurant (Quality)	300 to 400	25		
Restaurant (Average)	200 to 300	30		
Night Club or Bar and Grill	125 to 150	40		
Theater—Auditorium	200 to 300	15		
School (Children)	200 to 250	20		
School (Adult)	200 to 250	15		
Hospital-Operating Room	1,000 and over	40 or more		
Hospital-Private Room	750 and over	20		
Hospital—Ward	350 to 500	25		
Hospital—Clinic	200 to 300	30		
Railway—Sleeper	150 to 175	25		
Railway-Dining and Club Car	125 to 150	30		
Railway-Luxury Coach	100 to 120	30		
Railway—General Coach	80 to 100	35		
Airplanes	75 to 125	30		
Busses	75 to 80	35		

\*The Ventilation (fresh air) factor in this table refers simply to uncontaminated air, regardless of its source. If it is not obtained all or in part by Air Recovery, the only alternative source is outdoor air and corresponding containing load,



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construction, first quality materials throughout. Stainless

steel lids slide away or lift out. 8-Inch utility shelf.

Removable dividers inside. Toe space under edges.

Immediate Delivery! Industries P. O. BOX 272-AC DEMOPOLIS, ALA.

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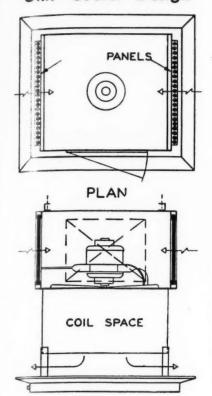
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panels

# Unit Cooler Design



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#### ELEVATION

Two single row panels are employed in this unit cooler to improve the air quality.

# Ventilation Problem - -

(Concluded from preceding page)

Consequently, large volumes of dilution air are needed in order to maintain the air quality required to assure passenger comfort, night and day. Railroad design engineers were faced with the problem of producing this ventilation within the limits of the power, weight, and space allowed for the heating and cooling equip-

Activated carbon filtration units fitting into space that was already available solved the problem of providing fresh air comfort economically. By converting used air that was already conditioned, to fresh air, activated carbon supplied ample ventilation without imposing an additional load on the heating and cooling equipment.

After seven years of thorough testing by the railroads, in which every method was tried, activated carbon air recovery equipment is specified for nearly all the new cars on order and being installed on existing cars as rapidly as conditions permit.

To illustrate the second adverse condition—when adequate ventilation requires bringing in large volumes of outside air (which has to be conditioned at considerable cost) a unit store-type cooler in a dress and specialty shop provides a good example. Conditions

Dress and specialty shop-Volume, 60,000 cu. ft.

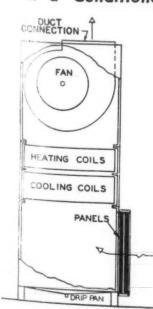
Fan capacity (total air)-6,000

Minimum ventilation-2,700 c.f.m. Infiltration factor-1,000 c.f.m.

Exhaust-none. Allowable resistance for air recov ery panels—not to exceed 0.2 in. W.G. Problem

To reduce outdoor air make-up to 1,000 c.f.m. (to counteract infiltration) while providing a minimum

# In a Conditioner



In a unit air conditioner such as shown above activated carbon panels are placed over the air return intake.

ventilation (fresh air) to 2,700 c.f.m. with the aid of air recovery panels at a resistance under 0.2 in. W.G.

6,000 - 1,000 = 5,000 c.f.m. recirculated air. 2,700 - 1,000 = 1,700 c.f.m. fresh air to be provided by panels.

1,700 = .34(Percentage of fresh air to be produced by panels).

5,000

#### Solution

To reduce outdoor air to 1,000 c.f.m. and provide a total of 2,800 c.f.m. fresh air ventilation, install air recovery panels designed for a total ca-

pacity of 5,000 c.f.m. with a resistance of 0.15 in. W.G. The panels may be arranged 2 high x 4 wide or 2 wide x 4 high as preferred. Economy

Based on average temperature zone conditions, the recovery of 1,800 c.f.m. return air means a capital cost saving of about 5 tons of installed refrigeration for cooling and 180,000 B.t.u. per hour capacity of installed boiler and radiation equipment for heating. It means also an operating saving of approximately 3,750 kw. hours during the summer and 2,000 gallons of fuel oil during the winter seasons.

The third condition, often encountered in unitary conditioners-difficult access to outdoor air or impure outdoor air-and the remedy to such handicaps is typified by the application of activated carbon air recovery units in two 5-ton 2,000 c.f.m. conditioners in a long, narrow and densely occupied office.

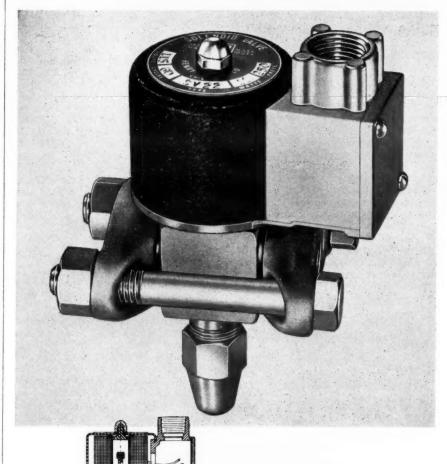
An odorous alley was the only source from which outdoor air could have been drawn and even if this air had been uncontaminated, lengthy and expensive duct work would have been required. By the simple installation of air recovery panels on the return air side of the units, 35% of the recirculated air was converted to

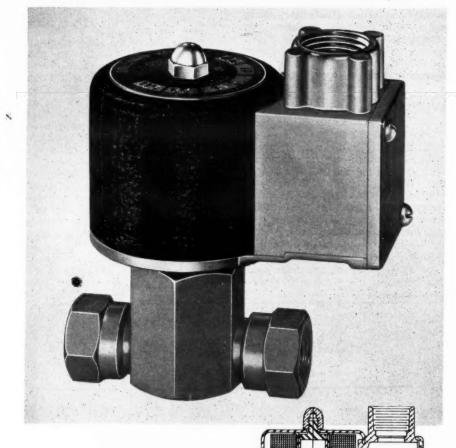
Thus 1,400 c.f.m. of clean, fresh air was supplied the office. To condition a like volume of outside air-if it were obtainable-would have required additional cooling capacity of about 5 tons and a comparable increase in heating capacity.

Aware of the need for air recovery

equipment that can be readily incorporated in unitary equipment and in all air conditioning and ventilating installations where the space available is limited, air recovery panels are designed with the same over-all dimensions as standard dust filters and installed and serviced with the same facility.

Each size panel is available with from one to three rows of perforated, carbon-filled tubes and four different tube spacings (distance between tubes in each row) to meet a wide variety of performance requirements. This design insures uniform effectiveness of the carbon upon the air flowing through the panel. By recirculating room air through these panels any amount of fresh ventilation air may be obtained, depending upon the number and type of panels.





# **2** NEW Solenoid Valves with

# TYPICAL HENRY ADVANTAGES

**MODEL SV-22** Compact Size

- Rugged Construction
- Built-in Outlet Boxes
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Hardened steel

renewable seat

For Ammonia and other

fluids non-corrosive to

# 10 FEATURES

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- 5. Aluminum die-cast junction box.
- 6. Hardened steel renewable seat.
- 7. Easily rotated coil and junction box. 8.  $\frac{1}{2}$  or  $\frac{1}{2}$  FPT flanged connection.
- 9. Standard voltages. 115 60 and 230 60, AC.
- 10. Triple-impregnated coils, moisture-repellant and oil-resistant. Low current consumption. Flamenol lead wires.

In the new SV-21 for Freon and SV-22 for Ammonia, Henry Valve deals another "pair of aces." Henry advanced design features make both these valves easy to install and service, pay you dividends in quiet, efficient, positive protection, and low current consumption. Check the "specs" on these two new, dependable, long-lived Henry Solenoid Valves right now . . . and ask your Henry jobber for full details.

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For Freon, Methyl Chlo-

Soft seat for positive

10 FEATURES

2. Come-apart construction for easy

4. 2-ton Freon capacity, with two-pound

6. Renewable Neoprene "soft-seat" for more positive shut-off.

7. Easily rotated coil and junction box.

8. 3/4" FPT connection std., available

9. Standard voltages 115/60 and

10. Triple-impregnated coils, moisture-re-

pellant and oil-resistant. Low current

consumption. Flamenol lead wires.

on special order with flare and solder

1. Non-corrosive brass body.

3. Stainless steel interior parts.

5. Aluminum die-cast junction box.

servicing.

pressure drop

connections.

230/60, AC.

Gas, etc.

2-ton capacity

ride, Water, Air, Oil,

Cable: HEVALCO CHICAGO 6

# **WAA Announces Sales** In Detroit and Wichita

DETROIT - Sales of surplus air conditioning and refrigeration equipment here and of aluminum and bronze metals at Wichita, Kan., by competitive bidding has been announced by the War Assets Adminis-

In Detroit, bidding will close on Feb. 3 on two Frigidaire rivet utility cooling cabinets, Revco cabinets, Chrysler air conditioning units, compressors, Deepfreeze cabinets, chilling units, dry ice storage cabinets, and other equipment.

At Wichita, bidding was to close Jan. 13 on large lots of aluminum sheet, alloy aluminum sheets, round aluminum tubes, aluminum alloy seamless tubing, round aluminum bars, round bronze bars, hard brass strips, silicon bronze tubing, and brass tubing.

# American Refrigeration Opens In W. Hartford

WEST HARTFORD, Conn. - The new home of American Refrigeration Service, formerly of Hartford, has been established at 945 Farmington Ave., West Hartford, the former site of Cion's, Inc. A complete electrical appliance sales and service center is being operated by John A. Warner and Edmund Logan.

Completely remodeled and two former stores consolidated into one, 5,000 sq. ft. of space are made available. Manager is William B. Collins.

# Grove Labs Installs Conditioning To Keep Summer Output Up

ST. LOUIS - A highly unusual manufacturing problem in the packaging plant of Grove Laboratories, proprietary drug manufacturer here, has been solved by the installation of an air conditioning system featuring close control of temperatures.

The problem was year-around production of ointment suppositories, used in treating colonic diseases. Designed to be easily melted by body heat, the suppositories are manufactured from a variety of ingredients, bonded together with cocoa-butter, which melts at relatively low temperatures.

Formerly, during St. Louis' notorious summer heat, it was necessary to give up production of the suppositories during the summer months -putting a serious load on the packaging department during the rest of the season, and stripping retailers' shelves of the drug item when it was most in demand. Although the suppositories were wrapped in metal foil, and experiments were made in outer coverings, it proved impossible to manufacture them efficiently.

The solution developed by C. W. Schockmiller, production manager for the plant, was the construction of a completely air conditioned "packaging line." This is set up in an enclosure of 50 x 15 ft., with six spun glass insulated walls and double plate glass windows all the way around. Air conditioning for this space is supplied by a 5-ton York "550" package unit, set up at the right side of the room, convenient to both the packaging line and a win-

Due to the extreme insulation of the room, and the fact that only from 6 to 10 girls are employed in it, it has been possible to keep the temperature between 70 and 72° F. when the outside temperature is 96° F. or better, according to Mr. Schockmiller. Thirty per cent of the air circulated is fresh air, for more employe comfort.

Thus kept under cooling during the entire packaging period, the suppositories remain firm and hard. They are rushed on delivery to retail drugstores with instruction to keep them in the store's biological refrigerators, or other cool places at all times. Suppository production, one of the most important fields of the Grove Laboratories, may now be carried out on a year-around basis.

# Million-Dollar Paramount Corp. To Sell Appliances

CHEYENNE, Wyo. - A milliondollar corporation to carry on a general merchandising business dealing in home appliances and other merchandise, buying and selling directly or on commission, has been incorporated under Wyoming laws under the name of Paramount Sales Corp. with headquarters here.

The five directors of the concern are Harve Hazen, secretary: R. J. Artese, agent in charge and manager; Thomas Seivert, Ralph Bott and Joseph Elliott.

Term of the corporation is 50 years and the capital stock is divided into 10,000 shares of the par value of \$100 each.

'Heir Conditioner'

# Baby Is Assured Even Temperature, 50% R.H. In Newest Juvenile Unit

# Fuse and Enclosed Mechanism Guarantee Safety

OMAHA, Neb.—An air conditioned unit called the "Heir Conditioner," designed to better the physical environment of babies by keeping them in a uniformly regulated temperature with 50% relative humidity and filtered air, is going into production here under the management of Philip D. and J. Paul McIntosh, brothers. The unit resembles a showcase, and may be categoried either in the major appliance or juvenile furniture line.

Co-designers of the unit are Philip McIntosh, student at the University of Nebraska College of Medicine, and Arthur L. Dunn, who built the first two air conditioned cribs about a year ago when both were expectant fathers. They got the idea from an article on child care in a national magazine, written by Prof. E. B. Skinner of Indiana University. In addition to the infant's welfare, the unit was designed as a labor saver for mothers, as it means less washing and ironing and does away with unnecessary and tiring stooping and bending when bathing and dressing the baby.

#### Top Is Detachable

The top of the unit is detachable and within its base are the heating element, blower, humidifier, air filter and storage compartment, with all electrical parts sealed in a fireproof compartment. Pilot lights on the exterior of the cabinet indicate when the heating element is on or off. Two-speed heat and blower controls are out of sight and reach of younger children. All electric current used by the unit goes through one sixampere fuse which carries only a five-and-one-half-ampere load, and in event of a short circuit the fuse blows immediately before any damage can be done.

The top compartment where the baby is confined fits flush with the base and is completely insulated. Insulation is covered with a washable plastic fabric that also serves

as padding. The mattress on which the infant lies is waist-high for the average woman and is made of canvas webbing laced with nylon cord. This advantage, according to Mr. McIntosh, encourages the physical development of the child and eliminates the hazard of suffocation in a too-soft mattress. The mattress may be kept taut at all times by the simple expedient of tightening the nylon cords.

Large French-type doors open separately and fasten simultaneously at bottom and top with a singleaction lock.

#### Temperature at 86°

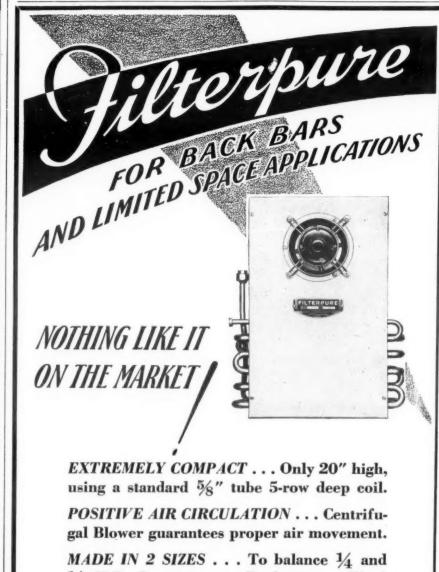
Interior temperature is themostatically controlled at 86° so that the infant is warm and comfortable without being encumbered with excessive clothing. The mattress is kept dry by the constant circulation of filtered air, so that a damp mattress dries in 20 minutes. A sheet that operates like a roller towel with the turn of a handle simplifies changing bedding.

When the child is asleep, window shades have been provided to roll down over the plexiglass panes of the crib. Should the temperature within the crib waver while the mother is busy elsewhere in the home, a battery-operated alarm calls her attention. The crib also is partially sound-proofed.

Three of the cribs already have been built and are in use. McIntosh has spent only part time building Heir Conditioners up until recently, but with the return of his brother, Paul, from army service, he plans to make it a full-fledged business and partnership.

The Heir Conditioners sell for \$300 and the McIntosh brothers already have orders for six units. They have made plans for a deluxe model to sell for \$360, and for a refrigeration unit which is going to be used as part of the crib's equipment in hot climates.





1/3 H.P. Compressors—Performance Plus! Sold by Leading Refrigeration Wholesalers

BETZ CORPORATION HAMMOND, INDIANA

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# Frozen Bakery Products Find Steady Clientele In a Suburban Community

# Progressive Housewives Take To Them; Display Facilities Are Store's Big Need

WEST HAVEN, Conn. — Five months of practical experience with "Frc-Doe," their own line of unbaked frozen products, has convinced Wolfe's Quality Food Shops, here, that frozen goods of this type will sell in an average American community and keep on selling beyond the novelty wear-off point.

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Fred F. Wolfe and his sons, Fred Wolfe, Jr., and Robert A. Wolfe, who operate Wolfe's Quality Food Shops in West Haven and East Haven, went into the freezing field last winter when it was still considered a Midwestren innovation and thousands of bakery owners were openly electrical

Among many objections voiced by old-line retail bakers, one which was particularly pertinent, involved the assertion that frozen unbaked products would be acceptable chiefly to apartment house dwellers of great cities and families of much more than average means.

The two suburbs of New Haven, East and West, are good communities in which to test this theory. Both are relatively small in population. West Haven has about 35,000 residents and East Haven half that number. Neither is a wealthy community. The two independent towns, each still governed by the traditional New England town meeting, are "bedrooms" for thousands who are employed in New Haven factories, offices, stores, transportation, and distribution concerns.

The towns have few apartment houses, comparatively few multi-family dwellings. Most homes are of the one-family type, but there are very few mansions.

## 10% of the Customers

According to Fred Wolfe, Jr., who runs the frozen goods end while supervising all production for the two Wolfe shops, about 10% of their regular bakery customers form the steady market for frozen items.

Mrs. John Rogers (fictitious name, of course) is a typical member of the 10% bracket. Her family is not wealthy, but John has a pretty fair white-collar job and Mrs. R. likes to keep up-to-date. Mrs. R. bought a frozen pie largely out of curiosity and now buys frozen items quite regularly because they save her time, they taste good, and—very important—they impress her guests.

Mrs. R. can brag that she "baked it herself," which, after all is no lie. Or, if she's out to impress in a different way, she tells the whole story of the origin of her pie or cake or whatever it is, and is labelled "modern," "progressive," or something similar in the bridgetable and Saturday morning market character-slaying sessions thereafter.

The Wolfes went into freezing after close study, chiefly by Fred, Jr., of its possibilities. On trips to Chicago for that special purpose, the older son visited the establishments of Robert Woods and Gordon Male and dug deeply into the subject.

# Equipment and Cost

Because the Wolfe's bakery production was already at a high level, it was necessary to enlarge the main shop in West Haven to provide space for freezing and to arrange for freezer storage space elsewhere. They installed a 10 x 12 freezer which, including the unit and construction cost \$3,000. Their initial cost on packaging ran about \$1,000. A new refrigerated truck will stand them another \$4,500, and the latest shop addition, 90 x 30 ft. in overall dimensions, will run about \$12,000.

The distance between the main shop in West Haven and the store in East Haven is about seven miles across heavy New Haven city traffic, but it has been found possible to transport frozen goods in shipping boxes in a standard truck. The refrigerated truck will facilitate wider distribution and the Wolfes are now preparing to market their frozen line on a statewide basis through quality food outlets.

The frozen-plate system is being used and present capacity is 1,900 lbs.

every two hours. A temperature of -20° F. is maintained. After freezing, the goods are taken off the plates and stored between 5 and 10 below. Fred Wolfe, Jr., points out that storage temperature should never rise

Mr. Wolfe declares that at the present time demand for frozen products exceeds the supply, adding that an executive of one large group of food stores reported to him that frozen bakery products made up 23% of the total sales of all frozen foods in a recent period.

"One of the biggest problems in frozen foods merchandising," Mr. Wolfe remarked, "is display. Open display freezers of the serve-yourself type are costly but vitally necessary if a real sales job is to be done. You can't sell frozen products successfully with non-visible equipment."

The Wolfes believe very strongly that the frozen goods field is one for bakers. Fred Wolfe, Sr., opened his West Haven bakery 35 years ago and has remodeled many times. Always receptive to new thoughts, this progressive baking family finds no novelty in pioneering. They've been doing it for years. They believe the retail division of the baking industry has a fine, sound future, and that retail bakers should exploit frozen goods while continuing to produce high-quality ready-to-serve foods.

Introduction of the "Fro-Doe" line was heralded by large newspaper space, running an entire week; radio announcements; large window dis-

plays and effective point-of-sale promotion. They installed an electric range in each store to illustrate proper handling and baking of the frozen items. An eight-page folder, giving full directions for each product, was printed.

### Items In the Line

The 13 items in the "Fro-Doe" line are as follows:

Apple pie (24 oz.)	\$ .8
Peach pie (24 oz.)	. 89
Blueberry pie (24 oz.)	.89
Baking powder biscuits (17 oz.)	. 56
Gold cupcakes (12 oz.) doz.	.50
Chocolate cupcakes (12 oz.) doz.	.50
Gold Loaf Cake (11 oz.)	. 46
Cream puff shells (12 oz.) doz.	. 49
Dinner rolls (12 oz.) and Sweet rolls doz.	.40
Blueberry muffins $(12\frac{1}{2} \text{ oz.}) \dots \text{doz.}$	.89
Angel loaf cake (7 oz.)	.39

Standard knockdown cartons of waxed cardboard are used by the firm for all products in the line. Labels are of standard design, featuring the name "Wolfe's Fro-Doe" and are pasted onto the package.

Free use of slogans has proven

effective in introducing the line. The Wolfes' stress "No fuss—no muss" and "It's smart to shop the modern way."

Fred Wolfe, Jr., doubts that unbaked frozen goods will displace the standard bakery line in the predictable future. It will be, however, a profitable side-line for many bakers, and one which should be kept in the bakery fold, he believes.

The Wolfes' spent months in study and experiment before they put their frozen line on the market. The first display of merchandise was made at the spring convention of the Connecticut Bakers Association in Waterbury on April 8, but public announcement was not made until some weeks

One of the great advantages of frozen unbaked goods emphasized by Mr. Wolfe is the elimination of stales, a problem which has plagued bakers little during the war and postwar years, but which return inevitably. He points out that frozen goods will keep almost indefinitely and that production can be regulated to demand by refilling storage space. The "rainy Saturday" hazard disappears when products are frozen.



"FREEZ-AREA" Cold Does Double Duty! More than two square feet of Arctic-cold surface... biting, bitter cold that (1) freezes food fast ... then goes on (2) to keep it frozen, wherever stored inside the roomy freezer; perfectly preserved; its flavor, freshness, tempting color and vitamin-richness intact... that's "FREEZ-AREA"!

This outstanding advantage...cold that does double duty...is only one of sixteen important features of the Model 11 FC-A, 11-cubic-foot International Harvester Freezer shown above. "FREEZ-AREA" ranks with improved side-wall refrigeration and protected temperature control as a unique advantage. The three...and seven others equally attractive... supplement these six basic selling features to be found in all International Harvester Freezers:

1. Floating Lid—2. All-Steel Construction—3. Comfortable Toe-Space—4. Hermetically Sealed Unit—5. Hermetically Sealed Insulation—6. Dulux Finish Over Bonderite

All are distinct quality advantages, all are geared to a complete program, the one objective of which is profitable sales for Harvester refrigeration dealers. It is a program solidly backed up by...

- Powerful National Advertising
- Coast-to-Coast Distribution
- Effective Nationwide Service
- Great-Name Prestige

The vast opportunities presented by the International Harvester refrigeration program are apparent. Get in touch promptly with your nearest International Harvester branch for information about open refrigeration territory.

INTERNATIONAL HARVESTER COMPANY

180 North Michigan Avenue

Chicago 1, Illinois

# INTERNATIONAL HARVESTER Refrigeration

THE INTERNATIONAL HARVESTER SYSTEM OF FOOD PRESERVATIONS

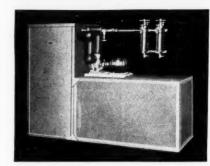
# What's New

# Filtrine Water Cooling Systems Are Packaged

BROOKLYN — Filtrine Mfg. Co. here has introduced several models of a new complete "packaged" circulating-water-cooling-system. These are said to be suitable for cooling and circulating light liquids or water for air conditioning, candy hardening, drinking water, film processing, industrial processes, jacket cooling, mold cooling, and welding machines.

According to the manufacturer, the evaporators employed may be used with any refrigerant, including ammonia. The large storage provided for cold water is said to provide for "peak" requirements.

The seven packaged models range in capacity from 38 to 311 g.p.h. Dimensions of the smallest model are 24 in. deep, 60 in. wide, and 57 in. high; the largest models are  $36\ x$   $110\ x\ 70$ , according to manufacturer's specifications.



One of Filtrine's new circulatingwater-cooling systems. The above model, one of the "RCP" lines, includes a storage cooler, centrifugal pump, insulated chilled water lines, duplex water filters (extra), and housing for refrigerating machines (not included).

# Tough, Alloy Hand Shears Developed by Bremil

ERIE, Pa.—Bremil Mfg. Co. here has developed a set of two all-alloy, portable hand shears, featuring component parts equal to the compound leverage strain.

The strength of the shears is said to be due to the fact that the shears are made with all alloy in levers, bolts, and pivot.

Shear No. 1 will cut sheet metal up to 11 gauge without springing the jaws, while shear No. 2 is 95% stronger at the pivot than similar shears, the manufacturer's announcement states.

Regardless of the manpower exerted on the handle, this shear is claimed to operate without overstressing any of its parts. The No. 2 shear, which weighs 28 lbs., is said to have worked successfully on ¼ in. thick .40 carbon stock.

The Bremil shears are equipped with removable heat-treated, machined, and surface ground blades, specifications show.

# 'Brain' of the New Electric Furnace



At left is what is known as the "brain" of one of the newest developments in postwar home heating, the Electromode electric furnace. The "brain" consists of the Minneapolis-Honeywell system of automatic controls that maintains a year-round check on heat-flow from a furnace roughly the size of a home freezer unit.



# Another Frigidaire First!

# ONE-PIECE ALL-ALUMINUM SHELVES

Each formed from a single sheet of aluminum!



You're twice as sure with two great names

Frigidaire made only by General Motors

# Electromode Corp. Starts Output of Heating Units

ROCHESTER, N. Y.—Production of electric home furnaces, equipped with automatic controls which are claimed to make them the most efficient units of this kind yet developed, is being started by the Electromode Corp. of Rochester.

R. E. Peguignot, general manager of the company, said most of the furnaces built this year will be shipped to Tennessee Valley states and Pacific Northwest where utility rates are low enough to make this kind of heating practicable.

The heart of the furnace consists of six patented elements like those used in heaters which the company manufactured for U. S. submarines during the war. Its "brain" is the Minneapolis-Honeywell Regulator "Moduflow" system especially adapted to control the heating coils.

This furnace, which looks more like kitchen equipment than the conventional central heating plant, is being made in two sizes, one for homes of eight to twelve rooms, containing up to 24,000 cu. ft. of room space; the other for homes up to 11,000 cu. ft. Each is 48 inches high, width varies from 26½ to 33 in. and the height from 58 to 72 in. Cabinets are of white enameled steel and have two neat chromium bands near the top for decorative purposes.

Although the furnace was developed before the war, production was halted by wartime demand for electromode heaters on submarines and Signal Corps trailers. The unit has been thoroughly tested in the plant and last year a typical installation was made in the home of H. D. Seaton on Lookout Mountain, in Chattanooga, Tenn., for an entire season's test run.

The furnace is rated at 25 kilowatts, 230 volts, 109 amperes, 60 cycles, a.c., single-phase, and has a rated output of 85,375 B.t.u. at full capacity. The house has an installed heating load of 1.4 watts a cubic foot. The load of 25 kilowatts is divided into six heating elements, each rated at 4156 watts.

Forced air circulation is obtained with a fan rated at 1,400 c.f.m. and driven with a ¼-hp., 115-volt belted motor. An air filter is located in the incoming cold-air duct of the furnace. Humidity control apparatus is an integral part of the system, being installed on the furnace in the outgoing hot-air duct. Removable filters clean the air.

The Chattanooga test furnace was regulated by outside and inside thermostats, but all units being manufactured by Electromode now are equipped with "Moduflow." The direct furnace control is an integral part of the unit, being mounted compactly in the cabinet. The "Moduflow" motor, controlled by exerior and interior thermostats, meters the flow of power to the six heating elements, turning them on of individually as the variations in temperature demand.

Records kept by E. Rodger Dodson, supervisor of the lighting department, Electric Power Board, Chattanooga, showed that consumption for the 1945-46 heating season was about 27,600 kilowatt-hours, representing a heating cost of approximately \$203. Complete insulation of the house would have decreased the cost approximately 20%, he stated.

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# What's New (Cont.)



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Window model of Kauffman room cooler.

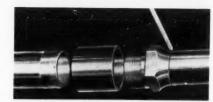
cu. ft. room. It is powered by a 1-hp. motor and is 34 in. long,  $17\frac{1}{2}$ in. wide, and 41 in. high. Type "B" is for a 6,000 cu. ft. room, has a 11/2hp. motor, and measures 39 in. long, 171/2 in. wide, and 43 in. high. Type "C," the largest model, has a 2-hp. motor and is intended for a 9,000 cu. ft. room. It is 44 in. long, 24 in. wide, and 46 in. high.

Type "A" is designed for 4,000

# Adapter Fitting Permits **Use of Thinner Tubing**

PORTLAND, Ore.—A new stainless adapter fitting, which permits the use of thin-walled stainless steel tubing in many piping installations where standard IPS stainless pipe is also used, has been introduced by the

The Esco P-T adapter, as the new item is called, is an addition to a full line of stainless steel flanged and



The Esco P-T Adapter

by Electric Steel Foundry.

Using the adapter fitting, stainless steel tubing can be incorporated in lighter take off systems from an already established standard piping

layout, according to the company. The tubing is butt-welded to the adapter and thus is permanently fitted with standard pipe threads and can be assembled as any pipe, the

manufacturer says. A system using this method is readily dismantled for cleaning or inspection, he adds.

#### West Coast Firm Set to Move

SAN DIEGO, Calif. - French, Hermes, & Thomas, Inc., 726 9th Ave., will relocate at Madrona and Landis Sts., Chula Vista, as soon as remodeling of a new factory is completed.

# Kauffman Offers 6 Room Cooler Models In '47 Line

ST. LOUIS-Four floor model type room coolers and two window models, representing an overall range of cooling capacity of from 1,500 cu. ft. rooms to 9,000 cu. ft. spaces, comprise the 1947 line of Kauffman Air Conditioning Corp. here.

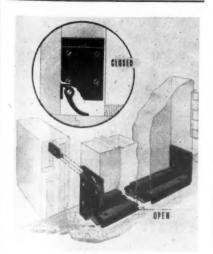
The window room coolers will fit any window 21 in. wide or more, only electrical connections being necessary. The type "Y" model will cool a 1,500 cu. ft. room with average exposure and lighting, while the type "X" window unit will handle a 2,500 cu. ft. room, the company claims.

Cooling, dehumidifying, circulation, and filtering of air is accomplished by the units, which employ a single motor and are controlled by one switch. Air filter is removable. Distribution of cooled air "in sheet form at breathing plane" is a special feature claimed by the manufacturer. The steel cabinet is finished in twotone walnut hand-rubbed.

Floor type models in the line also have air-cooled condensing units, and employ but one motor. All water of condensation is employed to cool the refrigerant gas, thus cutting horsepower requirements of the units, Kauffman claims. A heavy copper reservoir pan is provided for surplus condensate.

All moving parts are mounted on rubber vibration dampers to reduce Conditioned air is delivered from the units in a sheet form at an angle of 25° to keep the air at the "breathing plane," the company explains.

Type "W" unit is powered by a %-hp. motor and has the capacity to cool a 2,500 cu. ft. room, the company claims. The two-tone walnut finish steel cabinet measures 27 in. long, 15 in. wide, and 33% in. high.



Cross-section views of the new door seal.

nd ed in he

# **V&L** Home Utilities Makes Draft-Proof Door Seal

ROCKFORD, Ill.-V. & L. Home Utilities Corp. here claims to have developed a draft eliminating door seal, which anyone can install in a few minutes. Called "Draft Bloc," it is said to be completely automatic in operation.

Upon closing the door, the sealing blade is pressed against the floor, adjusting itself to any size opening up to 114 in. When the door is open, the seal snaps up out of sight, permitting the door to pass over thick rugs, the manufacturer points

It is of all metal construction with a molded rubber sealing plate, which is carried between a pivot plate and the actuating lock. Retailing for \$3, it will fit any standard door on either the inside or outside.

# Electric Steel Foundry here. screwed pipe fittings manufactured



ECONOMICAL and EFFICIENT

# NORTHERN-AIRE

COMBINATIO

#### DRAFT and BOTTLED BEVERAGE COOLER

The NORTHERN-AIRE brings you a combination of these seven desirable features: 1. A smart looking, practically designed modern bar. 2. A more efficient cooler for draft beer with the added advantage of direct draw. 3. Quick cooling and the maintenance of uniform temperature throughout the bottled beverage compartment. 4. Maximum storage space which means more "pay space." 5. Elimination of extra fixtures and accessories. 6. Compactness, convenience, and controlled cooling for greater profits. 7. Economical, trouble-free operation for years to come.

It's the perfect combination — plus refrigeration at

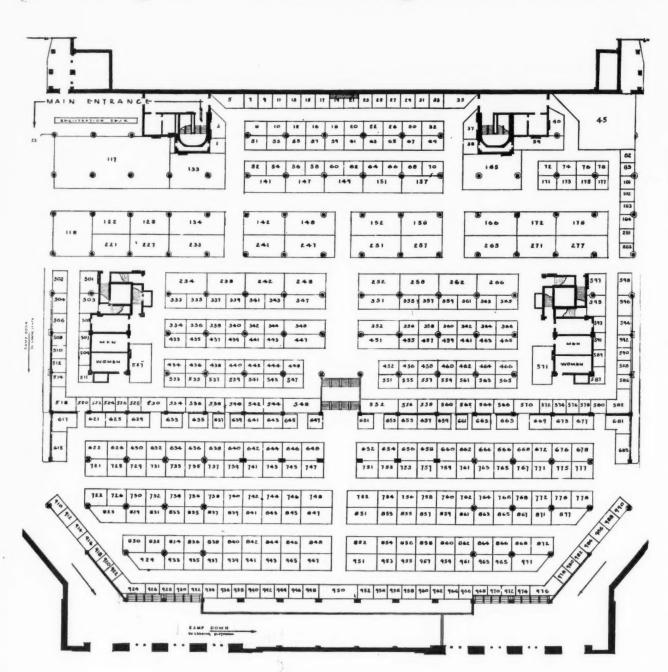
its best. Specially designed copper coils and controlled air distribution provide maximum cooling. Construction engineered for lasting service. Walls of aluminum sheet with baked enamel finish in golden beige. Bottom of galvanized steel sheet. Bar top of linoleum or polished Masonite. Trim of polished aluminum and stainless steel. Chrome plated faucets. In 2-Keg, 36-case size with 34 H.P. electric motor condensing unit. The NORTHERN-AIRE may be purchased without bar top where purchaser wishes to install under existing bar counter.

Write today for additional details

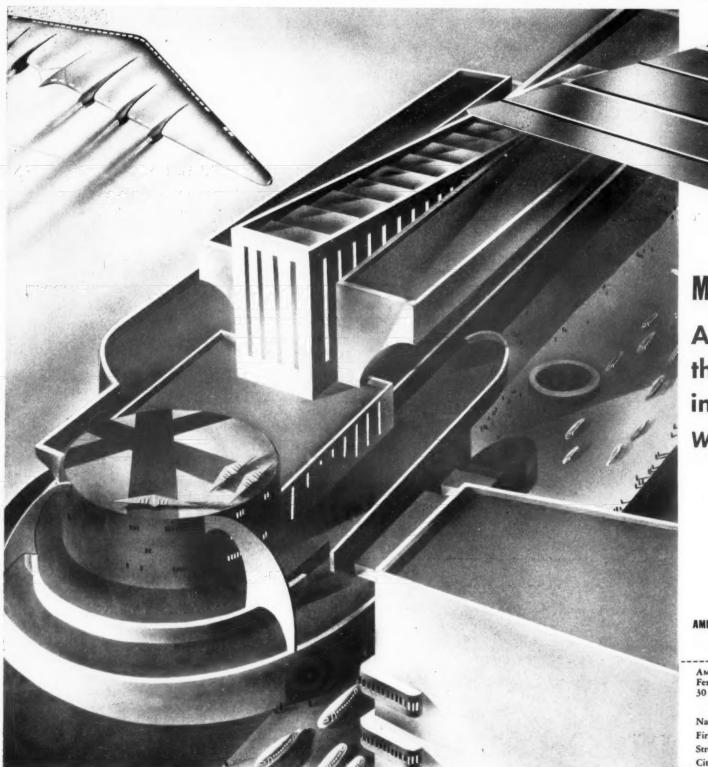
Manufactured by

AIRCRAFT COMPANY

# Heating & Ventilating Show Exhibitors and Booth Locations



SPACE NO.	Black & Decker Mfg. Co 655-657
Ace Engineering Co 22	Borg-Warner Corp.—Ingersoll Steel
Acme Industries, Inc	Div636-638
Adams Mfg. Co 843	Borg-Warner Corp.—Norge-Heat Div 848
Aerofin Corp 271	Boston Machine Works Co928-930
Air Conditioning Assoc. of Cuyahoga	Breuer Electric Mfg. Co 466
County 508	Brown Electric Co
Air Conditioning & Refrigeration Div.,	Brown Instrument Co 347
Worthington Pump & Machinery	Brundage Co
Corp642-644 741-743	Buffalo Forge Co
Air Conditioning & Refrigeration News 976	Burnham Boiler Corp
Air Controls, Inc	Cargocaire Engineering Corp 594
Air Control Products, Inc & 2	Carrier Corp
Air Devices, Inc	Carter Coal Co
Air Maze Corp	Central Die Casting & Mfg. Co 637
Airtemp Div., Chrysler Corp72-74-76-78	Century Engineering Corp
Airtherm Mfg. Co	Char-Gale Mfg. Co
Aldrich Co	Chicago Pump Co
American Air Filter Co., Inc929-933-935	Chrysler Corp.—Airtemp Div72-74-76-78
American Arr Filter Co., Inc	Clarage Fan Co
American Flange & Mfg. Co., Inc 837-839	Clayton & Lambert Mfg. Co459-461
American Gas Assoc 45-555-557-559-561	Cleaver-Brooks Co 846
American Radiator & Standard	Cleveland Steel Products Corp178-277, 598
Sanitary Corp	Coleman Co., Inc
American Ship Bldg. Co.—Delta	Cole-Sewell Engineering Co 339
Ship Bldg. Div 986	Combustion Control Corp 639
American Society of Heating &	Commercial Filters Corp 651
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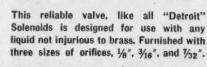
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# No. 683-3



Nominal capacity—liquid line 1½ tons Freon-12 2¾ tons Methyl 3 tons Freon-12 6½ tons Methyl 3¾ tons Freon-12 "

# No. 681

The No. 681 is of the pilot operated type and requires a minimum pressure drop of 1 psi

> Nominal capacity-liquid line 71/2 tons Freon-12-17 tons Methyl 1/2" female N.P.T. connections.



# No. 686

The No. 686 is a heavy duty, large capacity pilot operated valve which requires a pressure drop of 13/4 psi to operate the piston when used with refrigerants, 5 psi on water. It is made with 2 sizes of orifice,  $\frac{1}{2}$ " and  $\frac{5}{8}$ ".

Nominal capacity—liquid line 11 tons Freen-12 23 tons Methyl 17 tons Freon-12



No. 685 Strainer

Fits any Threaded Solenoid Valve. Fine mesh strainer of Monel metal to resist corrosion. Slips into adapter

tube, and is held in place by tubing and hex nut. Adapter tubes furnished with three sizes of connections to valve, and six sizes of tubing connections:

Adapters with ½", ¾" or ½" SAE tubing connections are available with ¾" MPT Valve connections. Adapters with ½" or ¾" SAE tubing connections are available with ½" MPT Valve connections. Adapters with ¾" or ¾" SAE tubing connections are available with ¾" Valve connections.

Cleaning or replacing strainer element very easy-just unscrew the hex nut.



# "DETROIT" SOLENOID VALVES \*\*FOR Refrigerants - Water - Air

"Detroit" Solenoid Valves, designed expressly for refrigeration and air conditioning work, are the result of many years' experience with all types of refrigeration valves.

Their performance is of the same exceptional quality found in "Detroit" Expansion Valves such as No. 673. "Detroit" Solenoid Valves are brilliant members of the "Detroit" Team.

POWERFUL They will lift against high pressures.

QUIET Design of plunger and guide tube minimizes or eliminates objectionable A-C hum.

DURABLE Moistureproof coils, bodies of non-porous cast brass, long wearing needles and seats give these valves exceptionally long life.

**EASILY INSTALLED** Substantial mounting boss on valve body provides easy means for rigid mounting.

EASILY SERVICED Easily disassembled and cleaned without disconnecting refrigerant lines or wiring.

POSITIVE CLOSING Non-magnetic needle and seat and strong "kick off" spring assure tight closing.

**ECONOMICAL** Low current demand (15 watts open on largest valve). Replacement parts if required are inexpensive.

FOUR WIRE COIL A four lead coil is available on any "Detroit" Solenoid Valve, for either 115 or 230 volt use.

# UBRICATOR COMPANY

General Offices: 5900 TRUMBULL AVENUE, DETROIT 8, MICHIGAN Division of AMERICAN RADIATOR & Standard Sanitary Corporation - RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG "Detroit" Heating and Refrigeration Controls • Engine Safety Controls . Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators



by GEORGE F. TAUBENECK

(Concluded from Page 1, Column 1) But what has that to do with new techniques?

To be sure, machine tools were invented which could bore holes in 28-cylinder crankcases simultaneously during the war.

Fine, dandy.

What peacetime automobile manufacturers, though, will specify 28-cylinder motors? That we ask you.

Again, we've learned how to shear metals to 30,000th-of-an-inch tolerances. What good will that expensive-processing knowledge do us in the fabrication of washing machines, and electric irons?

## New Industries— Not Startling Efficiency

Of course one can't deny that certain to-hell-with-the-cost scientific developments did turn up during World War II-especially those inventions which had to do with radiomicrowaves and new methods of creating motive power.

Some of these discoveries may be astounding, after they have been evaluated properly in terms of peace-time needs.

But such inventions lead to new industries-not to exceptional gains in the productive power of laborers in old, established industries. They are yet to be heard from, in terms of higher living standards.

#### Are People Working Harder?

As a matter of fact, all studies of labor productivity made by government during the last three years reveal clearly that both skilled and unskilled labor is producing less currently than it did before the advent of war.

The Federal Reserve Board statistics of industrial production do show an increase in total output.

But they take no notice of the fact that more than eight million extra women and male oldsters (to take no account of "child labor"-which was conveniently ignored by the statisticians) were lured into the nation's producing force during war-A great many of these proselyted folk aren't working today.

These statistics also take no account of the extraordinary overtime work registered by America's labor force in the late, unlamented World War II.

# Where Do They Get That Stuff?

Technological improvements? My eye! It was just a lot more people working exceptionally long hours that raised the figures.

New techniques, yes. New discoveries, new inventions-right again. But these discoveries will lead to the inauguration of new industriesrather than to the easing of working hours in existing fields.

It takes more man-hours to produce air conditioning and refrigeration equipment today than it did before the war.

And "technological improvements" created by war-stresses certainly won't come near to raising labor's efficiency by 70%!

We'll all be lucky if labor comes within 25% of matching its 1941 productive efficiency during the next two years. That's how low the willingness-to-work of Our People has sunk.

#### To the Point

The following contribution will add fuel to the above fire:

J. M. Keely Sales Co. Miami, Fla.

Editor:

In your extremely interesting and informative "Inside Dope" column,

you have, in my humble opinion, failed to put your finger on the real cause for low productivity in our factories and the manpower shortage.

To me, it appears we will never be able to get an hours work for an hours pay until we can again see the daily line at the employment windows, This will not come to pass as long as our spendthrift government pays in bonuses, subsidies, and what have you, some 4 or 5 million returned veterans so they can completely and comfortably loaf at schools, colleges, and on the job training racket. When this gravy train is turned down the alley, and these men have to work for a living as they fought for the right to do, then and only then, will we get efficient production.

The present worker sees an empty place beside him, looks out the window and sees nobody at the employment window, then feels he can safely take his own amount of sweet time because regardless of how bad he is, he can't be replaced.

> J. H. IRVINE, Appliance Division

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And then there's this item:

James D. Mooney, president of Willys-Overland, predicts that prices will stay high and may even go higher.

"We are obviously going to stay on a high price plateau," he told the Newspaper Advertising Executives Association last week. "The plateau might easily move a lot higher unless we can stop the depreciation of our money, and conversely, the rising prices that are a natural consequence of cheapened money."

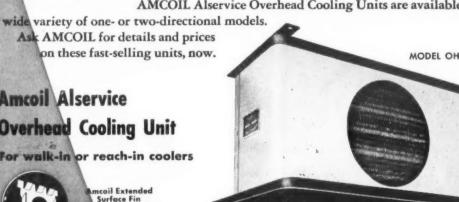
Mr. Mooney goes back to one of the favorite reasons for high cost of automobiles: the inefficiency of plant working conditions.

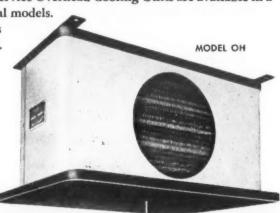
On the 40-hour week, plants work an average of 20 eight hour days a month, he pointed out. This is a total of 160 hours out of a possible 720, he said, or only 22% of the time available.

"If we allow something for the inefficiency that is going on and rate the operation down, say one third because of it, we can say that generally we are working about 15% of capacity," he stated.

Mr. Mooney urged the advertising men to exert their influence "to get people back to work so we can cut the cost of production and distribution."









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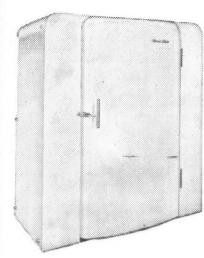
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Russell Sales Co., 1553 N. 37 St., Seattle 3, Wash.

# Some Heating & Ventilating Show Exhibits Of Special Interest to Dealer-Contractors

CLEVELAND—Among the many exhibits scheduled for the Seventh International Heating and Ventilating Exposition here will be several displaying air conditioning equipment designed for year-round operation and for comfort cooling, and equipment of interest to producers and dealers in such equipment.

Acme Industries, Inc.—A newly designed evaporative condenser said to be readily accessible and to cut service problems to a minimum will be displayed, along with the "Dry-Ex" water cooler and a line of shell and coil heat exchangers.

Air Devices, Inc —Air filters and diffusers and wind-actuated exhausters are among this concern's exposition products.

Air-Maze Corp.—"Greastop" and air filters will be shown by Air-Maze.
Airtemp Division, Chrysler Corp.—

Three types of packaged air conditioners, a room cooler, a sealed radial compressor cutaway demonstrator, and a residential year-round air conditioner in operation are to be included in Airtemp's exhibit.

American Air Filter Co., Inc.—A special electronic precipitator showing the removal of tobacco smoke will feature this firm's display.

American Flange & Mfg. Co., Inc.

—This firm will show samples of "Ferro-Therm" steel insulation.

American Thermal Industries, Inc.—What it calls "revolutionary" 5 and 7½-ton packaged air conditioning units will be exhibited by American Thermal Industries. The company also will display a section of a 5-ton-unit frame of new fabricated, aircraft-type construction.

nt

Anemostat Corp. of America—Ceiling and wall-type draftless air diffusers in operation, and units in combination with lighting fixtures.

Auer Register Co.—On exhibition in Auer's booth will be warm air and air conditioning registers and

Automatic Products Co. — A-P valves and controls are scheduled to be displayed.

Buffalo Forge Co.—An evaporative water cooler and a "PCGW" wet glass cell air washer. Along with these units, it will have "LL" and axial flow fans and industrial exhausters.

Carrier Corp.—Feature of Carrier's display is to be the new "5 Series" condensing unit. Also on display will be a conduit "Weathermaster" system, heat diffusers and unit heaters, and self-contained air conditioners.

Char-Gale Mfg. Co.—Aluminum fittings, registers, and grilles.

Clarage Fan Co—Heading the display will be the "Multitherm" blowthrough type air conditioning unit in which are incorporated multiple face and by-pass dampers allowing indi-

GASKET
JOE

IT'S A MONEYMAKING CHORE
TO CHECK
THE GASKET
ON THE DOOR

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vidual temperature control of sepa-

W. B. Connor Engineering Corp.— Connor representatives will give practical demonstrations of "Dorex" activated carbon air recovery and purification equipment and "Kno-Draft" adjustable air diffusers.

Curtis Refrigerating Machine Division, Curtis Mfg. Co.—Packaged air conditioning units and refrigerating and air conditioning compressors.

Detroit Lubricator Co.—Control equipment for refrigeration, air conditioning, and gas and oil heating.

Emerson Electric Mfg. Co.—Motors for a variety of heating and cooling units, and several types of fans.

Frick Co., Inc.—Picturizations of installations of air conditioning and refrigerating equipment.

Henry Valve Co.—Henry Valve will show off its new solenoid, ammonia solenoid, and check valves, and new magnetic float switch for pressure vessels. Besides these, there will be

displayed packed and packless valves; improved designs of refrigeration dryers, strainers, and relief valves; and other automatic control devices.

Ice Air Conditioning Co., Inc.— Five and 7-ton self-contained units, heating and cooling coils.

Imperial Brass Mfg. Co.—Refrigeration valves and tube fittings, refrigerant dehydrators and filters, shutoff and saddle valves, tube fittings and working tools, and welding and soldering equipment.

Kauffman Air Conditioning Co.—
Room and store coolers. The roomcooler line displayed will include ½
and ¾-ton window models and ½,
¾, 1, and 1½-ton floor models.

Lau Blower Co.—Lau's booths will house air conditioning and warm air heating blowers, blower accessories, and exhaust fans.

Marsh Corp., Jas. P.—Gauges, thermometers, steam and hot water heating specialties, and the "Tri-trol" regulator.

McQuay, Inc.—Air conditioning units, heating and cooling coils, and unit heaters.

Minneapolis-Honeywell Regulator Co.—A display of electronic controls will be the feature. The complete display will include, in addition, con-

trols for air conditioning, panel heating, heating, aeronautical, railway car, and refrigeration applications; domestic air registers; recorders; and "Moduflow."

Owens-Corning Fiberglas Corp.— "Dust-Stop" air filters and industrial and equipment insulation.

Pacific Mfg. Corp.—Window-type packaged air conditioners.

Penn Electric Switch Co.—Line and low-voltage room thermostats, limit controls, stack switches, stoker timer relays, a day-night clock, temperature and pressure refrigeration controls, water and solenoid valves, and humidistats.

Raytheon Mfg. Co., Industrial Electronics Division—A room unit precipitator, a washer-type home unit, an industrial package unit, an industrial unit-manual, and 200 and 400-watt power supplies.

Sturtevant Co., B. F., division of Westinghouse Electric—Air conditioning, air cleaning, and air handling equipment on display.

Torrington Mfg. Co.—"Airistocrat" propeller fan blades and "Airotor" blower wheels.

Trane Co.—Twenty types of its products will be exhibited by Trane: a reciprocating compressor, a cen-

trifugal compressor, the "Climate Changer," the "Custom-Air" unit.

United States Air Conditioning Corp.—A feature of this company's display will be the newly designed "usAIRco" unit heater with "Deflecto-Grille." The firm also will show its 3-ton refrigerated "Kooleraire," a room ventilator, blower, unit air conditioner, and a blast heat coil.

Utility Appliance Corp.—A new blower wheel manufactured by Utility Appliance is scheduled for display at the exposition, along with evaporative air coolers, blowers, fans, and other products.

White-Rodgers Electric Co.—A complete line of automatic controls for both heating and air conditioning, plus refrigeration temperature and pressure controls.

Worthington Pump & Machinery Corp.—A centrifugal compressor, a self-contained air conditioner, a "Freon" refrigeration unit, an ammonia refrigeration unit, and an evaporative condenser.

York Corp.—Emphasis at the York booth, which will contain a complete line of air conditioning and refrigeration equipment, will be on turbo compressor systems.



USERS OF "Freon" Safe Refrigerants are urgently requested to check all "Freon" cylinders on hand and to return empty cylinders at once—today, if possible!

Empties are badly needed to meet the greatly increased demand for "Freon."

Shortage of cylinders in

which to ship "Freon" has resulted from reduced deliveries of new cylinders... due to scarcity of raw materials, chiefly steel. One way to bridge the emergency... continue meeting tremendous demands for "Freon"... is to utilize every available "Freon" cylinder. So

won't you please check all cylinders you have on hand and return the empties NOW.



This handy memo may help you expedite matters... please relay it to the proper person or department.

(TEAR FROM CENTER AND ALONG THIS LINE)

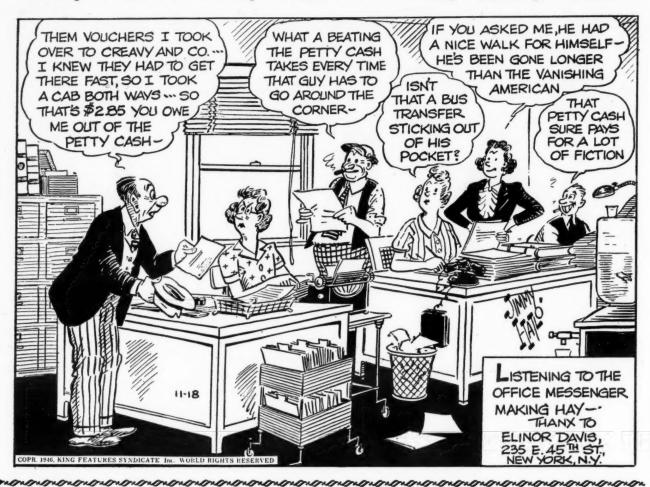


The "Freon" people have asked us to help meet a very serious shortage of cylinders. Please check all cylinders we have on hand and arrange to return empty "Freon" cylinders immediately.

Ship empty "Freon" cylinders via freight collect to:-

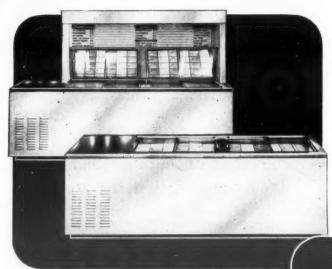
Kinetic Chemicals, Inc. Carney's Point, New Jersey

# They'll Do It Every Time . . . . By Jimmy Hatlo



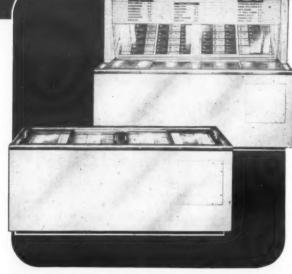
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- Economical to operate
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Model 520A self contained with, without superstructure



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Model 520 remote cabinet, with, without superstructure

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VOLUME 50, No. 3, SERIAL No. 931, JANUARY 20, 1947

# The Heat Pump (Reverse Cycle Refrigeration)

R EVERSE cycle refrigeration (which is also a means of heating) is rapidly passing from the experimental stage into the stage of commercial practicality.

Three manufacturers are already in production on units embodying this development, while 13 other firms are known to be conducting heat pump experiments. Still more are reported to be giving the idea serious thought.

Envisioning reverse cycle refrigeration as an integral part of the all-electric home and as a means of evening the electrical load throughout the year, public utilities are enthusiastic about its development, and several of them are backing it with full support.

Some utility executives believe that use of the heat pump in only 25% of the homes in one locality would double that district's kilowatt consumption.

So, let's look at this reverse cycle thing for a moment.

The three heat pumps now in production use either air or the earth as a source of heat. Drayer-Hanson's Airtopia unit uses only air, although a unit employing water is also in the experimental stage. Heat pumps manufactured by Muncie Gear Works and the Terra-Temp Co. of Indianapolis go into the earth for their source of heat. Muncie drops water pipes 200 ft. into the ground. Terra-Temp buries its pipe horizontally well underneath the earth's frost line.

Air, as a source of heat, is satisfactory in mild climates where the temperature seldom drops below 20° F. (At lower temperatures, frosting on outdoor equipment causes trouble.) In zones where the weather is not so mild, the earth seems to offer a better source of heat.

At the present time, the initial cost of a reverse cycle system far exceeds that of other heating systems. Right now, it would cost the owner of a six room house approximately \$2,800 for an installation, as compared to \$750 for a warm-air oil furnace or \$1,750 for a furnace plus a summer air conditioning system. All-year reverse-cycle systems selling for \$1,000 are foreseen, though, when quantity production arrives.

Once installed, the heat pump is said to produce several times the heat given off by other fuels per unit of energy required. For instance, one reverse cycle system operating in Pittsburgh (using air as a source of heat) has demonstrated that its consumption of electricity costs no more than a furnace burning coal at \$14 per ton, oil at 10 cents per gal., natural gas at 80 cents per 1,000 cu. ft., or manufactured gas at 40 cents per 1,000 cu. ft.

Naturally, the cost of operating a heating plant depends upon that plant's location. A Southern home can be heated much more cheaply than one located north of the Mason-Dixon line. And a home in Pittsburgh can be heated with less fuel consumption that one in Duluth.

So it is with the heat pump. In the South, the heating capacity of a reverse cycle unit would have to be no larger than its cooling capacity. Further north, the heat pump would need extra refrigerating capacity in order to do its summer air conditioning job.

The real saving to the consumer, however, comes in the bility of this single, integral mechanical device unit to do both heating in winter and cooling in summer. In addition, it keeps the all filtered and pure, provides proper humidity, and requires no bulky inconvenient fuel supplies.

All in all, it would seem that reverse cycle refrigeration may have a big future. Everybody in the industry should keep by eve on it.

# YOUR SERVICE WORK IS EASIER

because (P) expansion valves are dependable in any position or any temperature & location

> Body position and location of an A-P Thermostatic Expansion Valve makes absolutely no difference to its accurate and supersensitive refrigerant-control efficiency. You can install it with the body in any position, or in any temperature demanded by the limitations of your application. Further — the valve body can be placed either higher or lower than the thermostatic bulb without affecting the valve operation in any way.

This greatly simplifies installation — a fact that thousands of refrigeration service engineers are proving every day to their own profit. And it is because of the A-P type of construction with the liquid cross-charged power element and loading spring feature, which combine to maintain the large sensitive diaphragm in constant equilibrium for accurate refrigerant control under all conditions.

This is only one of many features that help you to faster, easier installation of A-P Thermostatic Expansion Valves and assure more accurate, DEPENDABLE refrigerant control on any system, large or small . . . for your greater profit in refrigeration service.

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MODEL 215 THERMOSTATIC EXPANSION VALVE

STOCKED AND SOLD BY GOOD REFRIGERATION JOEBERS EVERYWHERE . . RECOMMENDED AND INSTALLED BY LEADING REFRIGERATION SERVICE ENGINEERS

## MANUFACTURERS!

# DO YOU DESIRE COMPLETE COVERAGE **CALIFORNIA?**

We offer you 23 years of experience and continuous contact with dealers, jobbers and manufacturers in California. The past 11 years exclusively in commercial refrigeration and air conditioning.

California is the big market of the future. We have the contacts and can do the job for

## C. G. WALTER & CO.

Manufacturers Representative 5060 AMBROSE AVE. HOLLYWOOD 27, CALIF.

# Filter 'Laundry' Is Cleaning Permanent Types for Re-use at 30 Cents Apiece

By W. M. Sharp, General Manager, the F. D. Crew Co., Inc., Philadelphia

Considerable savings can be achieved for the owner of an air conditioning system through the services offered by our company, which operates a plant and specially designed machinery to clean the permanent, metal type filter used in all types of air conditioning systems.

We are saving approximately \$3,100 dollars a year for one of our clients who formerly used throwaway filters. Other clients report comparable savings, and, in addition, we believe this filter "laundry" service results in better filters which more effectively remove the dust from the air. Also, the nuisance of constantly buying replacement throwaway filters is eliminated.

This filter cleaning machinery was developed by Frank D. Crew during the war at the suggestion of the U. S. Navy. It was so designed that approximately 1,000 filters could be cleaned in eight hours, representing a tremendous advance over the laborious, time-consuming, handcleaning methods.

In the Crew company's Air Filter Laundry an extensive conveyor system is employed. Filters are hooked on to regularly spaced tongs and

first pass over a row of shakers where the loose dirt is shaken off. Thence the filters pass through two 500-gallon tanks filled with a caustic solution to remove dirt and grease.

Next two hot water tanks and a hot water spray chamber remove traces of the caustic solution on the filter, after which the filter conveyor line goes through a hot air drying chamber. Final operation-recoating of the filters-is performed in an automatically controlled oil spray chamber. The filters are then removed from the conveyor and stacked for delivery.

Our charges to cur customers are based on the number of filters to be serviced and almost invariably represent to the customer a substantial saving as compared to doing the work on his premises. Using our service, the customer need allot no space for cleaning tanks and other equipment, nor invest in solvents or adhesives.

Further, by using our service, a definite program is created and followed to insure that the filters will be cleaned as often as required, and no oftener. A contributory cause of trouble with ventilating and air conditioning systems also is eradicated.

Many filters are cleaned on a calendar, or time, basis-that is, the user decides they should be cleaned every six weeks, four weeks, or the like. While this is often desirable, the most logical method is to clean the filters on a dirt-accumulation

REFRIGERATION

ACCESSORIES

TEMPRITE PRODUCTS CORP

PINOCCHIO

**FREEZERS** 

Pinocchio Lock and Hinge models

in 10-15-20-30 and 40 cubic foot ca-

pacities, also glass tops in 15-20

and 30 Cu. Ft. Self-Contained and

Remote-with and without Cano-

pies. Immediate Delivery-Write

Glass Top Model-

· Equalizer Tanks.

for Prices.

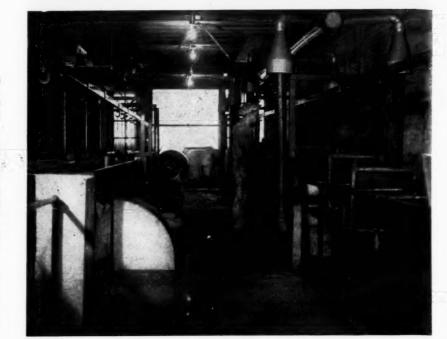
Accordingly, we make available to

Exchangers.

· X-Ray Refriger

ating Units.

• Self-contained,



Operations In Filter Cleaning Establishment

Air filters carried on a conveyor system in the Frank D. Crew Co. plant pass through tanks containing special caustic solution for removal of dirt and grease, thence through clean, hot water tanks, and finally through a drying chamber.

our customers a filter resistance gauge. This gauge shows an increasing resistance to the flow of air through the filters as the dirt accumulation rises in the filters. This means we clean cur customers' filters when the dirt deposit dictates and not necessarily on a time cycle

A permanent filter, such as we specialize in servicing, has an extended life span. By avoiding unnecessary filter cleanings, we save our customers a considerable amount of money over a period of years.

A user of the throwaway, or temporary, type filter is first attracted to it by its lack of need for cleaning, but we believe that the recurrence of the cost of buying new filters will dampen his original enthusiasm.

The permanent, or metal, filter holds more dirt than a throwaway filter. The dirt penetrates the metal filter instead of lodging chiefly on its face. This means that a permanent, or metal, filter requires cleaning less often than a throwaway filter should be discarded. It means, too, that the user of a metal filter spends approxi-

stead of \$1.50 to buy another throwaway.

Many dealers who service warm air furnaces and air conditioning equipment find, that once the user turns to metal filters their service calls are reduced. Many service calls result from the fact that throwaway filters are often not discarded soon enough, and once they become filled with the dirt, they prevent satisfactory operation of the unit or furnace and cause the owner to send in a service call.

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INSULA 5 inche

CAPAC

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SIZE:

72 inch 30 inch 34 inch

COMPR

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work.

Because the metal filter is available in various types to meet different operating conditions, it is more adaptable to applications of industrial air filtering. The throwaway filter comes in only one type.

Our close acquaintanceship with the customers' filter installations enables us, at times, to make definite suggestions relating to possible improvements. For instance, we have frequently found that, due to lack of uniformity in the size of filter-holding frames, there is bypassing of air between the filter-enclosing channel or frame, the holding frame itself. Consequently, dirt is carried into the ducts and from there into the customers' showroom, offices, etc.

It is not difficult to correct the bypassing, and after this is done, the discharge of dirt is eliminated, thus ending the accumulation of dirt around grilles, and on walls and

Prompt service is an important factor in our Air Filter Laundry. Rather than deprive a customer of the use of his filters, for even a brief period, we provide him with filters, unless he already has spare filters. We take the filters to his establishment and have them installed before we pick up the dirty filters.

Many of our larger customers send filters to us for cleaning from points as far away as 125 or 130 miles.



THERMOBANK EVAPORATOR

# THERMOBANK

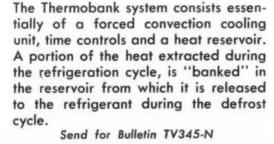
# REQUIRES NO ATTENTION

Defrosting is completely automatic and on a time schedule. No hand valves need be opened or closed; no coils need be scraped; no goods need be removed.

# MAINTAINS PEAK EFFICIENCY

Never loaded with frost, coils operate at peak efficiency always. Power is saved. Temperature fluctuations are minimized.

How it works



KRAMER-TRENTON Co. HEAT TRANSFER EQUIPMENT

A NEW ADDITION TO THE BULLETIN 700 LINE UNIVERSAL Solenoid Relays Change from NORMALLY-OPEN CONTACTS to NORMALLY-CLOSED CONTACTS by Simply Shifting Connections

Here's a new idea in relays hat enables you to provide for unexperted design or circuit changes. To change from "normally open" to "normally closed" contacts, you merely change connections. These Universal relays have the same "millions-of-operations" construction that has made Bulletin 700 solenoid relays a favorite in the air conditioning and refrigeration field. Of course these relays are equipped with maintenance-free, silver alloy contacts. Write Allen-Bradley Company, 1313 S. First St., Milwaukee 4, Wis.

mately 30 cents to clean a filter in-RESH FROZEN FOOD Complete Refrigerator Supply 92 - 7th Ave., New York 11, N. Y.

# Solving the Duct-Cleaning Problem



Here is another factor in maintenance of air cleaning facilities in air conditioning systems. The Air Filter Service Co. of St. Louis uses a crew which includes some midgets, and special apparatus, to clean ductwork.

. . .

ST. LOUIS-Air Filter Service Co. here, air conditioning service firm which specializes in cleaning of ducts in comparatively inaccessible locations, traces much of its work volume during the last four years to the fact that four midgets are on the company payroll.

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Ben Misbauer, head of the firm, was unable to contract for many air conditioning renovation jobs when he went into business six years agosimply because there was no way of "getting at it." This situation went on until he hit upon the idea of employing extremely small-sized men. who could get into spaces measured in inches to do a thorough cleaning

or repair job. There are two crews of two midgets each on the company's staff, all four averaging less than 100 lbs. of weight, although slightly larger than the circus variety of midget. Each is small enough to crawl through standard flat air conditioning ducts, to clean them out, make adjustments, install new controls, etc. Since using them, Air Filter Service has been able to take on almost every type of renovation work.

The midgets are paid \$1.25 an nour, good compensation being indicated due to the dangerous nature of some of the work. At times, the

men are required to crawl through 150 or 200 ft. ducts, pulling vacuum hoses and nozzles with them. Each man carries a fire extinguisher, inasmuch as fire caused by dust particles and overheating is their principal hazard. One man was recently caught while cleaning duct work in a 150 ft. duct which suddenly leaped into flame. His handy fire extinguisher saved him from serious injury, however.

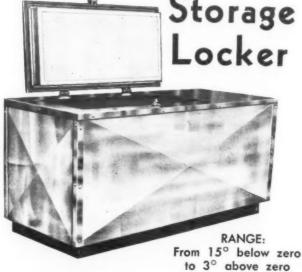
Jobs run up to 3,000 ft. of ductwork to be cleaned in this way, according to Mr. Misbauer. Before going on the job, every man is X-rayed to ferret out any possible tuberculor diseases, silicosis, or lung injuries.

"Sanitation of this type works two ways," Mr. Misbauer said. "We are not only interested in the health of our men, but seeing that the inside of the air conditioning ducts are as clean as possible."

After vacuum cleaning the inside of the ducts, the midgets go through with a chemical powder which destroys bacteria, cleans out insect deposits, etc. Much publicity has been attached to almost every job the firm has turned out, according to Mr. Misbauer. Incidentally, he has a long list of trainees from "miniature men" interested in getting on the company payroll.

# Storage INSULATION: Locker 5 inches thick CAPACITY:





De Luxe model shown is stainless steel throughout. Other models have stainless steel tops with baked on white enamel or polished aluminum sides. Smooth Inside surface for easy brushing off of frost. Large lid-23 x 45. Toe space.

DEALERS WANTED



# Household Air Cleaner Is Now Available



Pictured above is the recently introduced Westinghouse household model "Precipitron," an electrostatic air cleaner. While this method of air cleaning in air conditioning systems has certain recognized advantages, the matter of cost is a factor. The above household model sells for \$420 plus installation cost. Commercial size models are correspondingly higher. There is also the matter of maintenance and operating costs, on which little information is available at present, but which might constitute quite a factor.

Not until such figures are collected and analyzed will it be possible to make accurate comparisons on a cost basis with other air cleaning methods.

# condensing

1/2 H.P. AIRFLOW Condensing Unit, twincylinder, 580 RPM, 4020 B.T.U. at 20 degrees suction and 90 degrees ambient temperature. With back-pressure control, flywheel and fan belts. Less motor.

in lots of 6 or more.

F.O.B. N.Y.C. BOX 2187, AIR CONDITIONING & REFRIGERATION NEWS

Also Available:

NEW ALL-STEEL SECTIONAL WALK-IN COOLERS. Write for Specifications and Prices.



Model R C 40

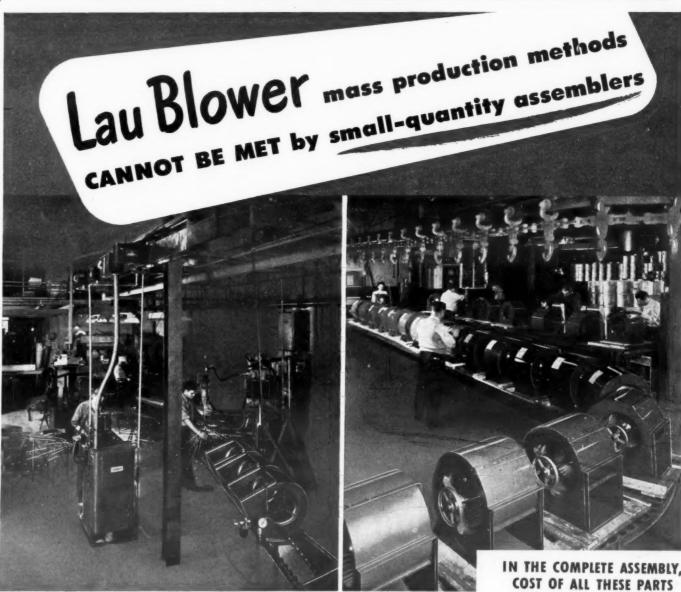
40 Cu. ft. capacity

#### The New Modern ZerO Food Freezer

8" Fiberglas Insulation. Built-in Fast Freezer. Now available with or without compressors. Shipped in sections—crated—easily erected by refrigeration mechanics.

Dealers write for proposition and prices

ZerO Refrigeration Co., Saukville, Wis.



There are many positive advantages the ultimate one being exact, known costs-in buying blowers completely assembled, packaged, ready to put on the line. It may seem a simple matter to buy wheels and then build housings for them. But it isn't so simple-your problems are innumerable, and your costs questionable. Besides, the combination may not be exactly right for efficient air delivery performance.

Lau has an investment of thousands of dollars in engineering and equipment to say nothing of years of testing and research in order to produce standardized blowers with precision-matched wheels and housings for best possible performance. Performance is a known quantity. Costs are known. Mass production facilities of this largest manufacturer of furnace blowers make it possible for Lau to offer you unmatched low prices for complete blower assemblies. If you've been thinking about building your own blowers, get all the facts first. Write.

MUST BE CONSIDERED Motor

# Mounting

Cutoff

Housing

Sides

Housing

· Blower Pulley

Motor

- Shaft
- Bearings
- Collars Washers
- Nuts
- Bolts · Bearing
- Support
- Blower
  - Support

Pulley • Belt

And, besides, there are labor, purchasing, warehousing, painting and stocking costs, material spoilage and waste, attendant merchandise losses, inventory costs, plant handling, and the cost of final assembly. If blower is not installed in the furnace before shipment there are additional, expensive packaging costs.





WORLD'S LARGEST MANUFACTURER OF FURNACE BLOWERS

# Air Conditioning & Commercial Refrigeration Shipments for First Half of '46

# **New Bureau of Census Report Provides** Information on Unit Sales by Quarters

WASHINGTON, D. C .- The report just issued by the Bureau of Census of the U.S. Department of Commerce covering shipments of Air Conditioning & Commercial Refrigeration Equipment for the first and second quarters of 1946 is the first release of this type covering quarterly data.

Previous releases covered annual and semi-annual periods. Heretofore, all reports in Series M52A included information for two types of equip-

(1) Commercial Refrigeration Unitary Equipment

(2) Air Conditioning Equipment and Components and Accessories for Air Conditioning and Commercial Refrigeration Equipment.

for Conventional and

Hermetic Type Compressors

In the quarterly release, however, only air conditioning equipment, and components and accessories for air conditioning and commercial refrigeration equipment, as compiled from Part II of Census Form M52A are included.

Data on commercial refrigeration unitary equipment, except farm freezers, will be presented annually. Farm freezer shipments will be shown on a quarterly basis in an early release which also will include statistics on home freezers.

The statistics in this report cover all types of air conditioning equipment and components and accessories normally sold as standard items. In addition, certain types of railroad air

Packed in Special

Cardboard Boxes or Containers

(2) Part numbers always visible.

(3) Easily stored in bins or on shelves.

ASCO, INC.

(1) Complete inventory record.

Offers

conditioning and self-contained refrigeration units for trucks and trailers, as well as absorption systems, have been included in the release in the category of miscellaneous air conditioning and refrigeration equipment.

The release giving information for the first and second quarters of 1946 is based on reports submitted by 71 manufacturers, 8 more than the 63 manufacturers included in the corresponding section in the survey for the period July through December, 1945. Of the 71 companies included in the report, estimates were made for a few companies, representing a small portion of the total industry, that did not submit their reports in time to be tabulated.

Table 1 presents summary data on domestic and export shipments. Tables 3 and 4 cover detailed information for the first two quarters.

The shipments statistics included in the report apply to equipment actually billed and shipped during the first and second quarters of 1946. These figures are equivalent to completed sales. Complete units delivered on consignment or shipped to a branch warehouse for stock are not included. The dollar values shown are the manufacturer's net billing price, f.o.b., factory.

The dollar value of all shipments rose 24% from \$40 million in the period July through December, 1945 to almost \$50 dollars in the first half of 1946. This increase was due primarily to the sharp rise in the shipments of heat exchanger equipShipments of Air Conditioning Equipment and Components and Accessories for Air Conditioning and Commercial Refrigeration Equipment: Summary by Major Class, First Half and Second Half of 1945 and First Half of 1946

Table

Product

Total

1 hp. 1½ h 2 hp. 3 hp. 5 hp. 7½ h 10 hp 15 hp 20 hp 25 hp 30 hp 40 hp

50 hp

Compress

Centrifuga

in

Ca

AI

for

RA

recipro cooled, Under

Total         * 49,823,719         * 40,331,825         * 31           Condensing units         303,048         21,937,641         222,901         19,963,353         131,500         16           Ammonia refrigerants         832         815,022         820         951,871         965         1           Air cooled         286,030         16,149,433         206,851         12,888,128         120,180         10           Water cooled         16,186         4,973,186         15,230         6,123,354         10,355         4           Compressors and compressor units         78,446         6,801,246         55,464         5,880,390         51,876         3           Ammonia refrigerants         1,694         2,853,415         1,988         3,261,573         1,223         1           Refrigerants except ammonia 76,752         3,947,831         53,476         2,618,817         50,653         1           Centrifugal refrigeration machines         145         2,941,362         151         2,292,873         34	Value ollars)
Product         No.         (dollars)         10.         222,901         19,963,353         131,500         16         31,500         16         222,081 <th>ollars)</th>	ollars)
19,863,353   131,500   16   16,963,353   131,500   16,963,353   131,500   16   16,963,353   131,500	
Condensing units         303,048         21,937,641         222,901         19,963,353         131,500         16           Ammonia refrigerants         832         815,022         820         951,871         965         1           Refrigerants except ammonia 302,216         21,122,619         222,081         19,011,482         130,535         15           Air cooled         286,030         16,149,433         206,851         12,888,128         120,180         10           Water cooled         16,186         4,973,186         15,230         6,123,354         10,355         4           Compressors and compressor units         78,446         6,801,246         55,464         5,880,390         51,876         3           Ammonia refrigerants         1,694         2,853,415         1,988         3,261,573         1,223         1           Refrigerants except ammonia 76,752         3,947,831         53,476         2,618,817         50,653         1           Centrifugal refrigeration machines         145         2,941,362         151         2,292,873         34	563,883
Ammonia refrigerants         832         815,022         820         951,871         965         1           Refrigerants except ammonia 302,216         21,122,619         222,081         19,011,482         130,535         15           Air cooled         286,030         16,149,433         206,851         12,888,128         120,180         10           Water cooled         16,186         4,973,186         15,230         6,123,354         10,355         4           Compressors and compressor units         78,446         6,801,246         55,464         5,890,390         51,876         3           Ammonia refrigerants         1,694         2,853,415         1,988         3,261,573         1,223         1           Refrigerants except ammonia         76,752         3,947,831         53,476         2,618,817         50,653         1           Centrifugal refrigeration machines         145         2,941,362         151         2,292,873         34	938.567
Refrigerants except ammonia 302,216     21,122,619     222,081     19,011,482     130.535     15       Air cooled     .286,030     16,149,433     206,851     12,888,128     120,180     10       Water cooled     .16,186     4,973,186     15,230     6,123,354     10,355     4       Compressors and compressor     .78,446     6,801,246     55,464     5,880,390     51,876     3       Ammonia refrigerants     .1,694     2,853,415     1,988     3,261,573     1,223     1       Refrigerants except ammonia     76,752     3,947,831     53,476     2,618,817     50,653     1       Centrifugal refrigeration     .145     2,941,362     151     2,292,873     34	550.786
Air cooled	387 781
Water cooled	490.167
units      78,446     6,801,246     55,464     5,880,390     51,876     3       Ammonia refrigerants     1,694     2,853,415     1,988     3,261,573     1,223     1       Refrigerants except ammonia     76,752     3,947,831     53,476     2,618,817     50,653     1       Centrifugal refrigeration machines     145     2,941,362     151     2,292,873     34	897 614
Ammonia refrigerants 1,694 2,853,415 1,988 3,261,573 1,223 1 Refrigerants except ammonia 76,752 3,947,831 53,476 2,618,817 50,653 1 Centrifugal refrigeration	
Ammonia refrigerants 1,694 2,853,415 1,988 3,261,573 1,223 1 Refrigerants except ammonia 76,752 3,947,831 53,476 2,618,817 50,653 1 Centrifugal refrigeration machines	697.969
Refrigerants except ammonia. 76,752       3,947,831       53,476       2,618,817       50,653       1         Centrifugal refrigeration machines	797.424
machines	900.545
machines	
	700.619
	226.727
	070.291
	100,945
Air conditioning 2,928 1,642,139 2,133 1,162,024 717	322.947
	777.998
Other heat exchanger	
	055, 491
Note: This symbol "*" denotes not applicable. †Includes condensers and	liquid
coolers of shell and tube and shell and coil types, as well as fin coils (heating	
cooling) and plate type evaporators.	

Table 1—Air Conditioning Equipment and Components and Accessories for Air Conditioning and Commercial Refrigeration Equipment: Summary of Shipments by Major Class of Product, First and Second Quarters 1946

Fi				_		Complete	
	T	otal		Do	mestict	Ex	port‡ Valu
Product	No.	Value (dollars)		o.	Value (dollars)	No.	(dollars
Section I-	-Con	nponents a	and Acc	ess	ories		
Total	*	22,514,479	)	*	21,529,271		985,20
Condensing units	594	9,584,757	131,4	110	9,110,120	5,184	474,63
Ammonia refrigerants	485	453,847	4	137	406,083	48	47,76
Refrigerants except ammonia. 136,	109	9,130,910	130,9	73	8,704,037	5,136	426,87
Air cooled128,	871	7,038,767	124,0	26	6,681,035	4,845	357,73
Water cooled 7,	238	2,092,143	6,9	47	2,023,002	291	69,14
Compressors and compressor							
units 30,	264	3,353,035	27,3	76	3,117,406	2,888	235,62
Ammonia refrigerants	979	1,651,096	8	347	1,499,501	132	151,59
Refrigerants except ammonia. 29,	285	1,701,939	26,5	29	1,617,905	2,756	84,03
Centrifugal refrigeration							
machines	67	1,358,758		65	1,328,818	2	29,94
Heat exchanger equipment		8,217,929		*	7,972,927		245,00
Evaporative condensers 1.	022	1,033,279	9	160	986,921	62	46,35
Unit coolers 39,	671	3,838,175	39.1	56	3,719,066	515	119,10
	402	830,355	1.3	65	814,536	37	15,81
	269	3,007,820	37.7	91	2,904,530	478	103,29
Other heat exchanger							
equipment§	*	3.346,475		181	3,266,940		79,53

equipment§		3,346,475	*	3,266,940	*	79,535
Section II—Self-Containe	ed Air (	Conditionin	g Units and	d Absorption	on Systems	
Self-contained air conditioning units						
Store type	3,812	2,616,990	3,675	2,537,815	137	79,175
Room type	- 11	H	11	-	11	1
Miscellaneous air conditioning and refrigeration equipment, including absorption						
systems		387,895	*	374,746		13,149
	Second	Quarter	1946 Ship	ments of	Complete	Units
	T	otal	Dom	estict	Expe	ort‡
		Value		Value		Value
Product	No.	(dollars)	No.	(dollars)	No. (e	dollars)

Secon	Total			mestic	Export#	
Product No.	0.	Value (dollars)	No.	Value (dollars)	No.	Valu (dollars
Section I—C	omj	ponents a	nd Access	ories		
Total	*	27,309,240		25,746,332		1,562,90
Condensing units	54	12,352,884	158,643	11,583,185	7,811	769.69
Ammonia refrigerants 34	17	361,175	321	331,201	26	29.97
Refrigerants except ammonia. 166,10	)7	11,991,709	158,322	11,251,984	7,785	739.72
Air cooled	59	9.110,666	149.823	8,474,843	7.336	635.82
Water cooled 8,94	18	2,881,043	8,499	2,777,141	449	103,90
Compressors and compressor						
units 48,18	32	3.448.211	42.021	3.098,767	6.161	349.44
Ammonia refrigerants 71	15	1.202.319	602	1.017.701	113	184.61
Refrigerants except ammonia. 47,46	37	2.245.892	41.419	2.081,066	6,048	164.82
Centrifugal refrigeration		_,	,	-,,		
	78	1,582,604	71	1,467,040	7	115.56
Heat exchanger equipment	*	9,925,541		9,597,340		328.20
Evaporative condensers 1.21	0.	1,231,184	1.091	1,105,351	119	125.83
Unit coolers 48,21	18	4,188,031	47,839	4,093,211	379	94,82
Air conditioning 1,52		811,784	1,488	796,223	38	15,56
Refrigeration 46,69		3,376,247	46,351	3,296,988	341	79,25
Other heat exchanger		-,,		_,,	0.11	
	#	4,506,326		4.398,778		107.54

Self-contained air conditioning units						
Store type		2,576,376	3,581	2,540,386	76	35,990
Miscellaneous air conditioning and refrigeration equipment.	11	II	н	10	п	11
including absorption		010 171				. 007



**WALK-IN REFRIGERATORS** Rugged quality construction

E STORES FARMS RESTAURANTS INSTITUTIONS FACTORIES M DAIRIES # FURRIERS

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temperatures ... available with self-contained refrigeration system Available in sizes from 675 to 3,400 cu. ft. capacity. WRITE FOR A CATALOG IMMEDIATE DELIVERY



MARLO COIL COMPAN

ST. LOUIS 10, MISSOURI

Table 3—Air Conditioning Equipment and Components and Accessories for Air Conditioning and Commercial Refrigeration Equipment: Shipments by Type of Product,

First Quarter 1946

Production

	of Units							
	corporate		G1.1		C 14 Y			No. of
	n Unitary				Complete U			Plants
E	quipment	1	Fotal Value	De	mestic† * Value		Export‡ Value	Re-
	Made in ame Plant	No.	(dollars)	No.	(dollars)	No	(dollars)	ing
Product Si	ame Frant	No.	(donars)	140.	(donars)	140.	(donars)	ing
		S	ection I—C	omponen	its and Acc	essorie	s	
Total	. *		22,514,479		21,529,271		985,208	71
Condensing Units,								
Total		136,594	9,584,757	131,410	9,110,120	5,184	474,637	34
pofrigerants, excer	ot							
ammonia, total	. 20,737	136,109	9,130,910	130,973	8,704,037	5,136	426,873	31
Air cooled, total.	. 19,830	128,871	7,038,767	124,026	6,681,035	4,845	357,732	30
1/3 hp. and unde	er 3,974	36,772	931,983	35,697	920,781	1,075	11,202	10
1/4 hp	. 12,025	27,734	1,193,704	26,922	1,156,005	812	37,699	26
1/3 hp	. 1,463	33,770	1,737,770	32,834	1,679,080	936	58,690	27
½ hp	.)	16,015	1,134,395	15,149	1,058,863	866	75,532	26
% np		5,875	624,546	5,456	577,353	419	47,193	26
1 hp	. \ §2,368	3,990	519,416	3,606	466,009	384	53,407	24
116 hp		2,018	354,513	1,871	327,077	147	27,436	20
2 hp		1,971	371,056	1,811	336,415	160	34,641	22
3 and 5 hp.§		726	171,384	680	159,452	46	11,932	13
Water cooled, tota		7,238	2,092,143	6,947	2,023,002	291	69,141	25
1/3 hp. and under	§ ]	201	15,725	193	14,984	8	741	6
½ hp		485	47.304	479	46,702	6	602	13
% hp		601	67,208	576	64,613	25	2,595	15
1 hp		934	131,269	907	127,184	27	4,085	18
11/2 hp		723	126,583	674	119,891	49	6,692	19
2 hp		1.015	211,048	992	206,204	23	4,844	21
3 hp	<	1,475	392,406	1.396	369.886	79	22,520	23
5 hp		1,001	348,467	948	339,751	53	8.716	17
7½ hp		313	227,486	304	222,238	9	5,248	14
10 hp		218	140,868	212	137,877	6	2,991	12
15 hp		138	128,704	136	127,145	2	1,559	11
20 hp	1	19	24,608	18	23,246	1	1,362	7
25 hp		39	53,826	39	53,826	1	1	3
30 hp	1	18	31,518	18	31,518	1	17	5
40 hp		23	46,825	22	45,710	ï	1.115	5
50 hp and over§		35	98,298	33	92,227	2	6.071	5
Ammonia refrigeral		00	00,200	00	02,221	-	0,011	
reciprocating, wa								
cooled, total		485	453,847	437	406,083	48	47.764	10
Under 3 hp		22	8,919	22	8,919	T	11,101	5
3 hp		11	5.076	11	5.076	1	1	4
5 hp		117	66,820	108	61.056	9	5,764	8
7½ hp		52	39,538	46	35,341	6	4.197	5
10 hp		115	100,621	103	90.168	12	10,453	6
	•	68	74,650	57	61.174	11		5
15 hp		00	14,000	91	01,174	11	13,476	9

	T	Shipr otal		Complete U		port‡	No. of
	1	Value		Value	137		Report
Product	No.	(dollars)	No.	(dollars)	No.	(dollars)	
		Section	I—Con	ponents and	Access	ories	
Compressors and compressor units, total	20 264	3,353,035	27,376	3,117,406	2,888	235,629	25
Refrigerants except	30,201	0,000,000	21,010	0,111,100	~,000	200,020	
ammonia, total	29.285	1,701,939	26.529	1.617.905	2,756	84.034	15
1/4 hp. and under§		218,806	12,484	199.488	1,512	19,318	
% hp	5.899	123,353	5.466	117,535	433	5.818	
½ hp	3.189	102.330	2.714	93.092	475	9,238	
	2.298	86,128	2.129	80,948	169	5,180	
% hp	440	35,841	424	35.044	16	797	
1½ hp	428	28,501	415	27.722	13	779	
2 and 3 hp.§	1.779	128.872	1.694	122.767	85	6.105	13
	251	60.397	238	57.264	13	3,133	13
5 hp	132	59,462	129	58.222	3	1.240	1
7½ hp	227	106.829	221	104.127	6	2,702	1
15 hp	189	123,024	180	117.811	9	5,213	-
20 hp.	123	97.563	115	92,276	8	5.287	
	71	65.337	70	64,499	1	838	
	29	36.681	28	35,885	1	796	
40 1	121	182.502	113	171.234	8	11.268	
	71	146,274	71	146,274	1	11,200	
00 1	26	53,537	26	53,537	1	1	
60 hp	16	46.502	12	40,180	4	6.322	5
75 hp. and over§	10	40,004	12	40,100	18	0,322	é
Ammonia refrigerants,	070	1 051 000	847	1,499,501	132	151 505	9
total	979 28	1,651,096 $6,322$	19	4,267	9	151,595	4
3 hp. and under§			60		27	2.055	
5 and 7½ hp	87	34,617	89	25,144	11	9,473	
10 hp	100	53,709	95	47,944	16	5.765	
15 hp	111	79,046	93	68,115		10,931	7
	104	85,731		74,692	11	11,039	5
	89	99,039	77	87,424	12	11,615	
30 hp	105	155,950	97	145,342	8	10,608	6
40 hp	97	166,115	84	145,285	13	20,830	
	69	133,392	60	117,639	9	15,753	4
	38	110,747	38	110,747	1	90 460	5
	48	146,310	39	125,847	9	20,463	5
100 hp	22	94,321	20	83,301	2	11,020	5
101 to 200 hp	71	394,644	67	380,746	4	13,898	3
201 hp. and over§	10	91,153	9	83,008	1	8,145	4
Centrifugal refrigeration machines (water and							
brine chilling), total.	67	1,358,758	65	1,328,818	2	29,940	4

AIR-ITE . . . the newest ... fastest ... most economical beer pump on the market has only three moving parts! Built of die-cast aluminum, its DIATON action, piston type compressor with sealed-in, grease packed bearings requires no lubrication. Cannot contaminate beer. Connected directly with motor . . . there are no V belts or gears to wear. AIR-ITE is available for services other than beer pump operation. Write for details.

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# AIR-ITE The Balanced Pressure Beer Pump Guaranteed For Five Years of Beer Pump Operation!

# Pittsburgh Contractors Affiliate with N.A.R.C.

CLEVELAND — The Refrigeration and Air Conditioning Contractors Association of Pittsburgh, with 14 member companies, is the eighteenth organization to affiliate with the National Association of Refrigeration Contractors.

This membership, together with the NARC full company members, makes a total of 850 member companies in 38 states, the District of Columbia, and the Panama Canal Zone.

Officers of the Pittsburgh group are Robert B. Weston, president; H. A. Alexander, vice president; and W. D. Armour, secretary-treasurer.

The association holds regular meetings to maintain a close cooperation between the members on problems of common interest.

# Kansas City Trucking Firm To Air Condition Offices

KANSAS CITY, Mo.—The new general office building of Riss & Co., Kansas City truck line operating in 22 states, a one-story structure 70 x 100 ft. now being constructed on a 6½ acre site adjacent to a terminal dock, will be completely air conditioned.

In addition to office space, the building will include restaurant facilities, shower and locker rooms, and a sleeping loft for drivers, all air conditioned to equalize the hot summer temperatures and freezing winter weather to which the location is subjected.

8,044 5,830



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660,000 sq. ft. more
to build Carrier
Air Conditioning and
Refrigeration



Today, more than ever before, Carrier leads in air conditioning and refrigeration. For the acquisition of a huge, new 660,000-sq.-ft. plant in East Syracuse gives Carrier Corporation facilities that are among the largest, most modern in the world for the manufacture of air conditioning and refrigeration equipment!

This additional plant—part of Carrier's great expansion program—is necessary to meet the ever-mounting demand for Carrier products. Together with the large plant in Syracuse, it will in a matter of months produce the greatest volume of air conditioning and refrigeration in Carrier history.

Here, in these vast new facilities, is impressive evidence of Carrier's position in the air-conditioning field . . . a dramatic re-statement of the Carrier leadership which began with the creation of air conditioning 44 years ago.



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protect Coils, Condensers, Compressors, Valves and Dehydrators by picking oil out of the refrigerant stream and AUTOMATICALLY returning this oil to its proper place, the crankcase.

Aminco Oil Separators protect compressors by maintaining correct oil level in crankcase and by excluding oil from refrigerant stream they enable coils, condensers, valves and dehydrators to function most efficiently.

These oil separators are made for jobs from '3 H.P. to 120 tons and are used everywhere, ashore or afloat, where efficient refrigeration is desired.

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2125 North Harwood Street, Dallas 1, Texas

# Jordon to Hold Annual Factory Sales Convention In Philadelphia Feb. 14

PHILADELPHIA—Jordon Refrigerator Co.'s annual factory sales convention, to be held here Feb. 14 and 15, will feature its new "Freezewall," "Freezeshelf," and "Climatic Conditioning," the company revealed recently.

The sales meeting will start with luncheon and the showing of new models at the Penn-Sheraton hotel, to be followed by sales meetings and conducted trips through the new and enlarged Jordon plant.

Albert Fogel, vice president and sales manager, says, "many new pieces of automatic equipment have been installed, and Jordon is now rolling into full production."

Freezewall and Freezeshelf are two coil construction improvements, said to speed and intensify freezing action in Jordon frozen food cases and farm freezers, and provide a frozen food storage and freezing compartment in their reach-ins.

# Glycerine-Glue Fluid Used to Clean Filters

NEW YORK CITY—Claimed to be an efficient moistening fluid for filter bases employed in air conditioning and heating system, a glycerineglue solution can be prepared quite easily, according to the Glycerine Producers' Association here.

The product comprises a 50% solution of glycerine and water to which is added about 0.2% of glue. To make the solution, the glue is soaked overnight in a small amount of the glycerine solution, and the swollen glue is then dissolved in the remainder of the glycerine solution. It can be applied to the filters by spraying or dipping.

Cleaning of the filters is performed easily, it is claimed, because the glycerine-glue solution is readily removed by immersion in or spraying with either warm or cold water. After washing, the filters are again coated with the solution.

9ts a
REVELATION
—thats all!

- ★ Exclusive Dealer Franchise
- **★** Now in quantity production
- ★ All sizes: Industrial and Commercial
- ★ The last word in...

# WATER COOLERS

Revelation Company

Division of Interstate Engineering Corporation 2600 Imperial Highway El Segundo, California Table 3 (Cont.)—Air Conditioning Equipment and Components
And Accessories for Air Conditioning and Commercial
Refrigeration Equipment: Shipments by Type of
Product, First Quarter 1946

	т	Ship		Complete U		port‡	No. of Plants
Product	No.	Value (dollars)	No.	Value (dollars)	No.		Report.
Heat exchanger equipment, total	*	8,217,929	*	7,972,927	*	245,002	37
Evaporative condensers,			0.00	000 001	00	40 050	0.0
total	1,022	1,033,279	960	986,921	62	46,358	-0
Less than 3 tons	18 123	3,757	18 112	3,757 $28,156$	11	2,805	4
3 to 5 tons 5.1 to 7.5 tons	83	30,961 $37,530$	70	30,908	13	6,622	
7.6 to 10 tons	61	35,921	60	35,360	1	561	13
10.0 to 15 tons	144	89,593	140	86,874	4	2,719	14
15.1 to 20 tons	50	41,496	46	38,423	4	3 073	
20.1 to 30 tons	184	180,842	172	175,070	12	5,772	13
30.1 to 50 tons	215	259,684	200	242,919	15	16,765	13
50.1 to 100 tons	121	258,956	119	250,915	2	8,041	13
Over 100 tons	23	94,539	23	94,539	**	17	6
Unit coolers, total 3	39,671	3,838,175	39,156	3,719,066	515	119,109	36
Air conditioning (remote type), total	1 409	830,355	1,365	814,536	37	15.819	18
Less than 3 tons§	130	26,000	130	26,000	1	10,010	6
3.1 to 5 tons	154	47,210	148	45,849	6	1,361	10
5.1 to 10 tons	288	118,437	275	114,818	13	3,619	
10.1 to 25 tons	585	360,785	572	353,682	13	7,103	
25.1 to 50 tons	245	277,923	240	274,187	5	3,736	8
Refrigeration, total 3		3,007,820	37,791	2,904,530	478	103,290	31
Ceiling and wall mounted, total 3 2,000 B.t.u./hr.	37,070	1,990,198	36,688	1,966,959	382	23,239	28
	8,465	306,124	8,405	303,840	60	2,284	14
2,001-4,000 B.t.u./hr.	7,567	252,811	7,515	250,967	52	1,844	
4,001-6,000 B.t.u./hr.	4,601	206,730	4,508	202,192	93	4,538	
6,001-8,000 B.t.u./hr. 8,001 to 12,000	3,629	206,988	3,572	203,164	57	3,824	19
B.t.u./hr	4,624	287,659	4,564	282,825	60	4,834	20
B.t.u./hr	5,079	345,742	5,031	341,506	48	4,236	
Over 18,000 B.t.u./hr. Floor mounted—dry	3,105	384,144	3,093	382,465	12	1,679	15
type, total	887	611.836	825	568,001	62	43,835	17
Under 2 ton	20	5,939	20	5,939	1	1	4
2 to 5 tons	396	188,666	380	181,845	16	6.821	13
5.1 to 7.5 tons	270	194,735	244	172,066	26	22,669	12
7.6 to 10 tons	87	119,371	87	119,371	1	91	8
10.1 to 15 tons	95	73,989	75	59,644	20	14,345	9
Over 15 tons	19	29,136	19	29,136	47	1	5
Floor mounted-spray							
type, total	312	405,786	278	369,570	34	36,216	17
Under 5 tons§	26	17,177	21	13,090	5	4,087	13
5.1 to 7.5 tons	121	175,744	117	172,589	4	3,155	12
7.6 to 10 tons	21	24,069	21	24,069	1	1	8
10.1 to 15 tons	80	100,315	56	72,147	24	28,168	9
Over 15 tons	64	88,481	63	87,675	1	806	5
Other heat exchanger equipment, total	*	3,346,475		3,266,940		79,535	33
Condensers, shell and tu	be		*		*		
and shell and coil Liquid coolers, shell and tube and	•	535,311	•	506,838	-	28,473	14
shell and coil Fin coils—heating,	* "	128,076	*	122,191		5,885	11
other than forced	*	700 440	4	700 110	_	-	40
air units Fin coils—cooling,		720,110	*	720,110		1	10
other than forced air units	*	937,369		933,793		3,576	19
Evaporators,		001,000		500,155		3,510	43
plate type		1.025,609	*	984,008	*	41,601	8

Section II—Self-Contained Air Conditioning Units and Absorption Systems

Self-contained air conditioning units
Store type, total ... 3,812
2 and 3 tons§.... 1,164 594,718 1.074 558,693 36,025 5 tons ..... 2,456 1,661,839 72,317 2,418 59 1,636,941 24,898 183,693 18,252 201.945 98 26 20 tons and over§... Room type ...... Miscellaneous air conditioning and refrigeration equipment, including absorption systems 387,895 374,746

Note: The symbol "¶" denotes zero. The symbol "\*" denotes not applicable. †Continental United States. ‡Includes Canada, Mexico, and United States territories. §Combined to avoid disclosure of operations of individual companies. ||Data on shipments of room type air conditioning units combined as follows for first and second quarters, to avoid disclosure of operations of individual companies: Total—2,486 units. \$660,379; Domestic—2,073 units, \$563,814; Export—413 units, \$96,565.

## Table 4—Air Conditioning and Components and Accessories for Air Conditioning and Commercial Refrigeration Equipment: Shipments by Type of Product, Second Quarter 1946

Production
of Units

Incorporated
In Unitary
Equipment
Made in
Product

Same Plant
No. (dollars)

Product

Prod

		8	Section I—	Compone	nts and Acc	essorie	15	
Total			27,309,240		25,746,332		1,562,908	1
Condensing units, tota	al *	166,454	12,352,884	158,643	11,583,185	7,811	769,699	- 5
Refrigerants except			,,-					
ammonia, total	38,056	166,107	11,991,709	158,322	11,251,984	7,785	739,725	3
Air cooled, total	36,767	157,159	9,110,666	149,823	8,474,843	7,336	635,823	3
1/2 hp. and under	9,633	45,229	1,247,669	44,344	1,213,272	885	34,397	1
¼ hp	21,910	32,072	1,528,347	29,987	1,414,945	2,085	113,402	- 2
1/3 hp	2,656	43,170	2,342,372	41,409	2,219,658	1,761	122,714	- 2
½ hp	2,291	,20,389	1,466,011	19,215	1,356,937	1,174	109,074	- 3
¾ hp)		6,876	837,570	6,285	766,373	591	71,197	2
1 hp		4,045	561,231	3,610	495,446	435	65,785	
1½ hp	§277	2,131	363,968	1,974	334,807	157	29,161	2
2 hp		1,900	382,188	1,781	355,314	119	26,874	2
3 and 5 hp.§		1,347	381,310	1,218	318,091	129	63,219	1
Water cooled, total	1,289	8,948	2,881,043	8,499	2,777,141	449	103,902	-
½ hp. & under§)		1,023	100,691	969	95,896	54	4,795	1
34 hp		892	117,727	867	114,991	25	2,736	1
1 hp		1,424	215,733	1,341	204,145	83	11,585	1
1½ hp		865	172,560	820	165,240	45	7,32	2
2 hp		1,075	261,905	971	236,406	104	25,499	1
3 hp		1,614	450,627	1,549	432,108	65	18,51	2
5 hp		1,040	418,432	981	395,312	59	23,120	2
7½ hp	§1,289	363	346,528	358	343,463	5	3,065	1
10 hp		238	164,219	237	163,527	1	692	1
15 hp		236	233,732	229	227,847	7	5,885	1
20 hp		43	53,435	42	52,752	1	683	
25 hp		38	51,421	38	51,421	5	10	
30 hp		15	23,378	15	23,378	- 1	6"	
40 hp		26	53,761	26	53,761	7	er 1	
50 hp. and over§		56	216,894	56	216,894	5	1	
Ammonia refrigerant	8.							
Reciprocating wate	r							4
cooled, total		347	361,175	321	331,201	26	29,971	1
3 hp. & under§	*	37	18,170	35	17,355	2	815	
5 hp		62	38,371	58	35,805	4	2,566	
7½ hp		61	51,019	54	46,338	7	4,681	
10 hp	*	106	99,141	105	98,194	1	947	1
15 hp	*	35	44,173	29	36,799	6	7,374	1
20 hp. and over§		46	110,301	40	96,710	6	13.591	6

Production Compression units

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B.i Floor type, 5 ton 5.1 t 7.6 t 10.1 Over Floor type, 5 ton

5.1 to 7.6 to 10.1 Over Other heat equipmer Condense tube ar and co. Liquid co. shell a Liquid co. shell a Liquid co.

Fin coilsother th air unit Fin coilsother th air uni Evaporato

Self-contain condition; Store typ 2 and 3 5 tons . 7.5 tons 10 tons Room typ Miscellaneot tioning an equipment absorption Note 7

tioning a equipment absorption Note Continent a \$Combined ments of r quarters for quarters for the continents of the con



Table 4 (Cont.)—Air Conditioning Equipment and Components And Accessories for Air Conditioning and Commercial Refrigeration Equipment: Shipments by Type of Product, Second Quarter 1946

		Ship	pments	of Complete		port‡	No. of
Product	No	Value	No	Value	No.		Report- ing
and comp	ressor		49 091	3,098,767	6,161	349,444	24
units, total	. 40,10		42,021		6,048	164,826	21
1/2 np. and unders.	. 39,114	101,020	33,434 2,272	673,266	5,680 79	84,260 2,720	. 11
34 100. 1 http://doi.org/10.11/2 hp.	. 1,010	57,108	957 101		53	2,565	13
2 at 1 3 hp.\$	. 2,933	190,435	2,773 989	144,976	160 14	11,993 3,858	16 14
7½ hp 10 hp.	. 145	69,412	137 119	64,632	10	3,690 4,780	10
15 p	. 135	110,328	187 126	103,806	5	2,506 6,522	9
25 p	. 42	51,711	61 32	43,039	10	2,992 8,672	6
40 p	. 84	166,619	106 72 53	146,308	3 12 3	4,239 20,311 5,718	5
60 lp. and over§			602		113	184,618	10
total	149	64,069	132 40	56,962	17	7,107 2,019	6 5
10 hp	69		48 74	42,084	21	14,899 3,602	7 5
20 hp. 25 hp. 30 hp.	65	73,437 96,760	53 55		12 11	13,004 14,947	5
40 hp	45	80,193 109,084	45 42		11	19,695	5
60 hp	26	63,477 $112,822$	15 27	89,440	11 9	21,878 $23,382$	4
100 hp 101 hp. and over§	47	134,755 $323,102$	28 43	92,414 $301,358$	10 4	42,341 $21,744$	5
Centrifugal refrigeration machines (water and	1	1 700 000	-	1 407 040		118 804	
brine chilling), total§ Heat exchanger		1,582,604	71	1,467,040	7	328 201	4
equipment, total Evaporating condensers.	1 210	9,925,541	1.091	9,597,340 1.105,351	119	328,201 125,833	47 21
Less than 3 tons	1,210 21 120	1,231,184 3,635 31,947	21 111	3,635 29,717	119	2,230	4
3 to 5 tons 5.1 to 7.5 tons	130 99	56,168 53,270	104 95	45,140 51,270	26 4	11,028 2,000	15 15
7.6 to 10 tons 10.1 to 15 tons 15.1 to 20 tons	162 64	97,058 51,217	155 58	92,916 46,803	7 6	4,142 4,414	14 14
20.1 to 30 tons 30.1 to 50 tons	201 252	197,975 321,433	183 227	186,644 291,418	18 25	11,331 30,015	16 15
50.1 to 100 tons Over 100 tons	141 20	336,886 81,595	124 13	299,686 58,122	17	37,200 23,473	15 5
Unit coolers, total Air conditioning	48,218	4,188,031	47,839	4,093,211	379	94,820	35
remote type, total 3 tons and under§	1,526 184	811,784 33,957	1,488 184	796,223 33,957	38	15,561	20 7
3.1 to 5 tons 5.1 to 10 tons	196 318	56,361 $125,352$	189 306	54,908 122,004	7 12	1,453 3,348	12 16
10.1 to 25 tons Over 25 tons§	209	374,957 221,157	205	367,329 218,025	15 4	7,628 3,132	17 8
Refrigeration, total Ceiling and wall		3,376,247	46,351	3,296,988 2,356,247	341 277	79,259 20,736	31 28
mounted, total 1.000 B.t.u./hr. and under	277	2,376,983 8,172	45,305 275	7,949	2	223	6
1,001 to 2,000 B.t.u./hr		314,561	8,380	312,981	50	1,580	13
2.001 to 4,000 B.t.u./hr.		366,099	11,842	364,086	49	2,013	19
4,001 to 6,000 B.t.u./hr.		313.373	7,032	312,462	17	911	18
6.001 to 8.000 B.t.u./hr	3,909	229,841	3,889	228,086	20	1,755	20
8,001 to 12,000 B.t.u./hr	5,390	341,324	5,338	336,788	52	4,536	20
12,001 to 18,000 B.t.u./hr	4,914	316,552	4,833	307,826	81	8,726	18
Over 18,000 B.t.u./hr.	3,722	487,061	3,716	486,069	6	992	14
Floor mounted dry type, total 5 tons and under§	816 311	599,053 128,913	769 299	565,473 123,445	47 12	$33,580 \\ 5,468$	17 14
5.1 to 7.5 tons 7.6 to 10 tons	236 88	168,066 99,307	228 80	163,250 89,074	8	4,816 10,233	11 9
10.1 to 15 tons Over 15 tons	125 56	114,191 88,576	106 56	101,128 88,576	19	13,063	10
Floor mounted spray type, total	294	400,211	277	375,268	17	24,943	10
5 tons and under§ 5.1 to 7.5 tons	31 111	21,316 169,359	$\frac{26}{110}$	16,940 168,585	5 1	$\frac{4,376}{774}$	4 7
7.6 to 10 tons 10.1 to 15 tons	37 49	55,627 58,563	31 46	40,216 56,470	6	15,411 2,093	7
Over 15 tons Other heat exchanger	66	95,346	64	93,057	2	2,289	6
equipment, total Condensers, shell and tube and shell	-	4,506,326	,	4,398,778		107,548	33
and coils Liquid coolers,	*	615,738		590,555	. *	25,183	14
shell and tube Liquid coolers,	*	135,946	*	121,619	*	14,327	7
shell and coil Fin coils—heating		13,704	*	13,678	*	26	4
other than forced air units		880,850		880,730	*	120	11
other than forced		4 000 700		4.00=		05.	
air units Evaporators, plate type		1,391,786	*	1,368,970		22,816	18
	-Self-co	1,468,302		1,423,226 oning Units a	and Aheo	45,076	7
Self-contained air	2011-0	aramed Air	Conditi	oning Units i	/1.080	- peron Sys	cents
Store type	3,657	2,576,376	3,581	2,540,386	76	35,990	11
2 and 3 tons§	998 $2,479$	524,371 1,703,630	984 2,417	516,823 1,675,188	14 62	7,548 28,442	9 7
7.5 tons 10 tons and over§ Room type	85 95	109,260 239,115	85 95	109,260 239,115	1	1	5
Room type		H		11	- 11	il.	6
equipment, including absorption systems		016 151		011 001		4.00=	45
Continental Instant	f' den	916,151 otes zero.	The sy	911,264 mbol "*" d	enotes n	4,887	able.
Combined to avoid dischements of room type	osure o	of operations	of ind	xico, and Un ividual comp	anies.	tes territor Data on s	ries. hip-
quarters to avoid disclorunits, Sec. 379; Domestic-	mo of	the enemate		de dis torrow.	D AUI III	or and sec	2,486
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IMPERIAL Triple- FITTINGS

... The Flare Fitting with the groove in the seat

is extruded into the groove making a tight, self-sealing joint. Here is the joint that remains leakproof even though the face of the seat may be nicked or marred. This extra seal of safety is a plus feature that costs no more. Included in all sizes \%" and larger.

THE IMPERIAL BRASS MANUFACTURING COMPANY

565 South Racine Avenue • Chicago 7, Illinois

When the flare is drawn against this groove the copper tubing

# Plant and Institutional Expansions In Nebraska

LINCOLN, Neb.—A locker plant manufacturing expansion and a major institutional refrigeration installation have been announced for Lincoln in 1947, while the Minden (Neb.) Creamery has just moved into its recently completed addition which provides tripled cold storage space for milk, cream and butter, along with an expanded egg division.

The McGrew Machine Co., 2124 "Y" St., has already taken out a building permit to construct a \$10,000 addition to its plant. The firm manufactures cold storage

Union College of Lincoln will construct a new \$175,000 home economics building which has just been approved by the board of trustees, according to Robert W. Woods, president of the college, and the threestory brick structure will house refrigeration facilities for a classroom kitchen and bakery, as well as a dining room to serve students and seat over 600. Air conditioning equipment will be included.

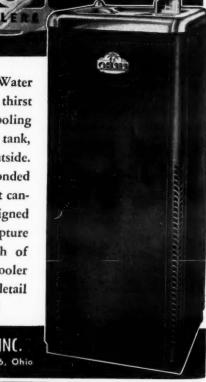
# Milk Receiving Station Started on Long Island

SUGAR GROVE, N. Y .- Construction has started here on the \$125,000 milk receiving station for the Queensboro Farm Products Co. of Long Island City, which is being erected on property purchased by the company last spring.



Inside and outside, Oasis Electric Water Coolers are built for years of maximum thirst satisfaction. The lowside - the water-cooling compartment-is a sturdy copper-alloy tank, heavily tin alloy-plated inside and outside. Outside, spiral copper refrigerant coil bonded to "lowside" tank guarantees refrigerant cannot contaminate water. Inside, newly designed "fingers" are ingeniously arranged to capture extra efficiency from every cubic inch of refrigerant. EBCO'S 20 years of water-cooler leadership assures extra value in every detail of every OASIS Electric Water Cooler!

EBCO MANUFACTURING CO., INC.



American Thermal Industries, Inc.



READY FOR 3 TON-71/2 TON AIR CONDITIONERS

Hmeri-therm Air Conditioning Units are built to tested specifications. Available in three to fifteen horsepower units.

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> Export Managers MELVIN PINE & CO., INC.

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IMMEDIATE SHIPMENT

(Heating Coils Available)

# New Refrigerators, Freezers, Appliances Shown at Chicago Winter Marts

# Philco Plans 2 New Freezers for Spring

Entire line of Philco household refrigerators, one 6 cu. ft., six 7 cu. ft., and three 9-cu. ft. models, were on display. These models are now in production and are being shipped to distributors and dealers, it was announced.

Prices on these models are the same as those recently announced by the company.

In addition, two home freezer models, AH51, 5 cu. ft., priced at \$199.50, and AH25, 21/2 cu. ft. and priced at \$149.50 were shown. Both these models are now said to be in production.

Two new Philco freezers have been announced and are to be in production this spring. Both new models are of upright design and will be produced in 10 cu. ft. and 71/2-cu. ft. capacity. Model AV100, 10 cu. ft. and Model AV75, 71/2 cu. ft. will have three separate compartments with individual glass door openings.

Upper compartment is designed for sharp freezing, while the two lower compartments will be sub-zero locker storage spaces. Upper compartments of the two new freezers can also be used for additional storage space. Added features of both models are a built-in lock as well as a warning

Editor's Note: On this and the facing page are several additional stories covering the various refrigerators, freezers, and other appliances which department and furniture store buyers saw at the annual Furniture Marts recently held in Chicago.

# Full Line of Units Shown by Crosley

Although no immediate change from 1946 household refrigerator models are planned by Crosley Division of Aviation Corp., it was announced that 1948 models are being readied and announcement on construction details and production may be made before the end of this year.

In addition to the 7 and 9-cu. ft. household refrigerators displayed, the full line of Crosley gas and electric ranges, kitchen cabinets, and sinks were on display.

Introduced for the first time was the new Crosley television receiver which made the bow on the first day of the show. Several important new features include a swivel tube mountting which permits viewing from either right or left.

# **Gibson Pushes Output** On 3 Household Boxes

Three models of the Gibson household refrigerator are in production and are now being shipped, according to company announcement. These models are 7.14, 6.73, and 7.21cu. ft. capacities.

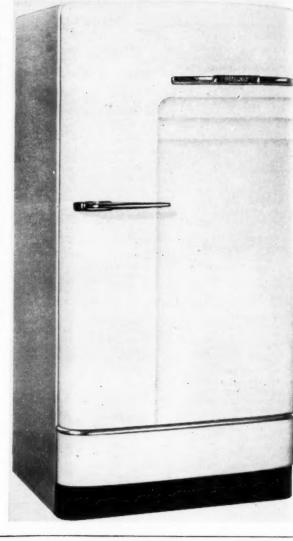
In addition, Gibson is in production on their 6.13-cu. ft. upright home freezer. Production of this model is underway and shipments are being made to distributors and dealers. The freezer construction features shelf-type evaporators for the five separate food compartments. Each compartment has a glass door opening and has a shelf area of 10 sq. ft. Use of the four shelves with extra freezing plate gives this model, HF-616, four fast freezing compart-

Heading the company's line of electric ranges is the Model ER-197-H which features the "Ups-A-Daisy" two-position burner. Through use of a lift-up cooking element four surface burners can be used. Lower position of this burner gives the range three surface burners plus the conventional deep well cooker. Although this model was announced in July of last year, production has only recently been under way.

Also shown were three conventional electric ranges, Models ER-ER-197-B, and ER-197-F.

At right is Hotpoint's new deluxe 8 cu. ft. refrigerator (Model EC8-1) in which space is so economically laid out that the company claims this 8 ft. model occupies the same floor space as Hotpoint's former 6 cu. ft. box. The EC8-1 has a freezer capacity of nearly 1 cu. ft., which means that some 31 lbs. of frozen food can be kept at temperatures as low as 13°. Frozen meats can be stored in an extralarge section. Special larger compartments at the bottom keep the fruits and vegetables at maximum humidity. Height of the 8 cu. ft. refrigerator is 60 in.; width, 30 in.; and depth, 29 in. Hotpoint plans to make a similar 10 ft.

model soon.



# AND YOU CAN GET KEPT CLEAN AS A ALL YOU NEED WHISTLE WITH SPEED RIGHT NOW! AND EASE Why Bundyweld Nickel makes

# better beverage Tubing

Cleanliness keeps taste supreme and it's easy to keep your tubing clean when you trust to Bundyweld Nickel. Any ordinary cleaning compound will keep it always fresh, always sanitary.

# And You Get 6 More Plus Values, Too!

- 1. Costs no more than old types of tubing for beer and carbonated water . . . yet outlasts them all and defies pitting, corrosion, brines, electrolytic or galvanic action.
- 2. Fast Cooling . . . Nickel cools liquids faster because it has high heat conductivity and high-strength Bundyweld permits using thin wall tubing.
- 3. Resists denting, collapsing or bursting . . . because of Bundyweld double wall construction plus inherent strength in Nickel.
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- 5. Easy to Form . . . coils more easily than other high-strength materials, and forms readily to any contour wanted in running leader lines through conduits. Various types of standard and special fittings can
- 6. Ready for you today . . . in coils up to 100 feet, in standard diameters.

Write today for FREE NEW BOOKLET-"How A Double Wall Gave a New Twist to Tubing" . . . gives you all the facts about Bundyweld Nickel Tubing. Distributors listed below will mail you the booklet and any other information about Bundyweld Monel and Nickel Tubing. Bundy Tubing Company, Detroit 14,

Bundyweld Monel Tubing retains its tubular

structure, even when drawn into a tight knot,

as demonstrated by the boy blowing bubbles.



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# Coolerator Unit Can Be Converted

Something new in the merchandising of the electric refrigerator is offered by Coolerator's "convertible unit" plan which allows the field conversion of the company's 5.25-cu. ft. ice refrigerator to a 7.75-cu. ft. mechanical unit.

Change-over from ice to mechanical is accomplished with only minor cabinet changes and a slightly higher base. The ice compartment is utilized for the evaporator containing icecube trays and frozen food storage

Produced in a limited quantity last year, Coolerator's 8.5-cu. ft. electric refrigerator is expected to go into production again the middle of the year, a spokesman said. Production of the electric model of the convertible unit, however, is scheduled to get under way in February or March.

Also displayed was the two-compartment, 15.5-cu, ft. farm freezer, which can also be used as a frozen food dispensing case by the insertion of metal merchandising trays. Not now in production but displayed was the company's chest-type 6.5-cu. ft. home freezer which will augment manufacture of the large freezer. This unit is expected to hit the market around June.

# **Bendix Displays** 'Production' Models

At last summer's markets, Bendix Home Appliances showed handmade models of its automatic home dryer and ironer. At these markets, the company displayed production models, along with the Home Laun-

Production recently got under way on both the electric and gas models of the dryer and on the deluxe model of the ironer.

Rated capacity of the dryers is given as 18 lbs. of wet clothes. Such a load is said to be ready for ironing in about 45 minutes or for storing in approximately 55 minutes.

The cylinder turns at 50 r.p.m., according to Bendix, and four triangular baffles toss and tumble clothes in cross-cross patterns. Air is forced through the drying cylinder by means of a specially designed centrifugal blower, which turns at 2400 r.p.m. A quarter horsepower motor drives both blower and cylin-

Bendix claims the ironer combines the best features of the rotary and flat-plate types. A 4 in. clearance between the roll and the shoe is said to make it possible to see the entire

# Production Set for Feb. 1 On New Sanitary Ice Model

Production of its new 5-cu. ft. ice refrigerator will be started by Sanitary Refrigerator Co. on Feb. 1, according to a spokesman. The company now is completing the manufacture of 39,000 old-type ice units for the veterans' housing program.

The new refrigerator, Model 756, is a double-door unit, with an ice It is said to capacity of 75 lbs. re-ice with a 50-lb. block.

Sanitary currently is turning out its 12.5-cu. ft. Quicfrez farm freezer. Sale of the cabinet without the unit is being promoted.

# Compact Blackstone Laundry Featured

counter-height Blackstone "combination laundry" consisting of automatic washer, dryer, and ironer all in matching cabinets, got the spotlight in the Blackstone Corp.

While final prices have not been established, the automatic washer carries a tentative price of \$270, and the whole ensemble will sell "in the \$500-\$600 price range," it was stated.

The automatic washer completes wash, rinse, and damp dry cycle in a minimum of 221/2 minutes, using 41 gallons of water. Washing of the clothes is accomplished by the agitator-type action. When the tub drains the dirty soapy water is extracted from the clothes by an "extractionrinse" action, after which the tub fills with clean water and the laundry is actively rinsed by the "agitatorrinse" principle, with fresh water flowing in and flushing away dirt and lint over the top of the basket.

In the damp-dry operation the spinning action is a 550 r.p.m to 'spin-dry" the clothes.

The dryer is an open-coil type. The roll-type ironer slides out from the cabinet for use, and is operated by button or knee control. Washer abinet is 25 in. wide, dryer cabinet 29 in. wide, and ironer cabinet 18 in. wide, taking up a total floor width of 3 ft.

# Launderall' Exhibit Shows **Driving Mechanism Operation**

Operating display of the F. L. Jacobs Co. "Launderall" automatic washer was designed to point up such "Launderall" features as the Re-Verso-Rol action, safety latch on the

washer basket, and the Roto-Drier. A special display setup revealed the operation of the driving mechanism, powered by a Jack & Heintz motor.

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# American to Produce 10-Ft. Freezer on New Sink, Freezer

plans to produce a complete electric sink—dishwasher, disposal, and sink combination—and a 4.2-cu. ft. home freezer were reported by a spokesman for American Central Division of Aviation Corp.

The two new appliances, to be offered as feature units in the American line of kitchen work centers, will not be in production until hird and fourth quarters this year according to present plans. A pre-production model of the electric sink was on display, completely automatic in operation and with a top window" in the dishwasher as of the features.

The home freezer, which will have a 30-in. base cabinet, was not on display, but is being designed to be added as a regular section of the American kitchen cabinets, the spokesman said.

Merchandising plan of the company is built around the "Plan-A-Kit" service which allows the purchase of additional units on a monthlypayment basis.

# Hamilton Dryer Prices Placed at \$229, \$244

New retail prices on both the gas and electric Hamilton automatic clothes dryer were announced by W. A. Friedrich, sales manager, home laundry division, Hamilton Mfg. Co.

The 600-E 220-volt (electric model) will retail at \$229.50; and the 700-G (gas model) at \$244.50. There is no change in the dealer discount.

The electric models have five main parts: a wire screen drum, 1/6-hp. electric motor, electric heating element, automatic timer switch, and thermostatic heat control.

Wet clothes are tossed into the woven wire screen drum, which revolves slowly at 50 r.p.m.

# Oscillating Sphere Marks New Speed Queen Washer

Special charted displays outlined the operation of the "Speed Queen" automatic washer manufactured by Barlow & Seeling Co. These demonstrated the following:

The washer basket in the "Speed Queen" is in the form of a sphere which oscillates on a horizontal plane at 144 r.p.m. A vertical fin on the bottom interior of the sphere helps provide the necessary agitation.

A cold water rinse featuring high pressure hydraulic action was also demonstrated. Rinse water is expelled by this same hydraulic action.

# Amana's Schedule



Powered by a 1/4-hp. hermetic unit, this new 10 cu. ft. freezer will be added to the Amana Society's line by the end of January.

Scheduled to be in production by the end of this month is the Model 110 home freezer announced by the Refrigeration Division of Amana Society. The new unit has been priced at \$389.50, it was announced.

The new freezer will have a capacity of 10 cu. ft. and will feature a newly designed control and temperature indicator. It is powered by a ¼-hp. unit.

This new model rounds out the Amana line with a spread of from 5-cu. ft. capacity to 123 cu. ft. The line starts with Model 50, 5 cu. ft., Model 30-R, 30 cu. ft., and Model 200, at the top of the present line with 123 cu. ft.

# Deepfreeze Has Baskets For '2-Cylinder' Model

New feature being emphasized by Deepfreeze is a set of wire baskets for the Model B9-46-B.

This model has the two Deepfreeze cylinders, both 30 in. deep. There are three sturdy baskets in the set, which are easily removed, yet fit snugly to the cylinder walls. All kinds of small food packages can be placed in these baskets, which lift out easily individually. The baskets rest on the top of a wire stand, this stand in turn serving as a storage space for bulky roasts, poultry, or larger packages.

The Model B9-46-B (with the wire baskets) offers 9.2 cu. ft. of storage space and lists at \$439.50 (Zone 1 prices). The B9-46-B (twin model without the basket), retails at \$429.50. Model A4-46, with a 22 in. deep food storage cylinder and 3.66 cu. ft. capacity, lists at \$209.95.

Deepfreeze is offering a number of new display helps for dealers, outstanding among which is a "mirrored lid" with a supporting frame, which mirrors a display of food in attractive fashion in the Model A4-46.

# **Model to Freezer Line**

Ben-Hur's line of farm and home freezers will be expanded this spring when production is scheduled to start on an 18-cu. ft. unit similar to the currently manufactured 12.5-cu. ft. freezer, a representative revealed.

The new freezer will be produced in both standard and deluxe models, with the latter equipped with a stainless-steel inner lining. Units will be of 1/3-hp. Like the 12.5-cu. ft. freezer, both of the new models will have separate freezing and storage compartments and two lids.

Ben-Hur now is producing the 12.5-cu. ft. freezer and a 6-cu. ft. unit in standard and deluxe models. Both were on display at the markets.

Prices are unchanged from the last OPA levels, the representative

# Presteline Keeps Lid on New 'Mystery' Products

The mystery of what new products were unveiled by the Domestic Appliance Division of Pressed Steel Car at a very secretive showing is still a mystery-as far as the general public is concerned. Distributors and dealers got through the curtained entrance to the inner display room only on closely checked

Officials would say only that public announcement of the products probably would not be made before mid-February.



PHILIP W. PUGH Recently named to manage range sales for the Crosley Division of Aviation Corp.

# Dave Tishler Sets Up New **Hartford Appliance Outlet**

HARTFORD, Conn. - The Cohler Radio & Appliance Co., 423 Main St., is now open for business. The store, occupying 1,600 sq. ft., is owned by Dave Tishler, formerly of Hartford, but now of Bridgeport, where he operates another business of this type. Cohler's will be managed by George DuBrow, well known in the radio and appliance field.

# Ben-Hur Will Add 18-Ft. Manages Range Sales 4 More Appliance Stores Prepare to Open In Boise

BOISE, Ida.—At least four new stores emphasizing housewares and appliances have entered the retail scene in Idaho or are readying for official openings, a recent survey revealed.

Home Auto & Supply opened recently at Buhl, with Marion Lowe and Glen King as proprietors.

A Firestone store, owned by Jack Buchholz and Keith and Andrew Redford, has opened in Weiser, while the official opening of another Firestone store at Preston, was held early this month. Smith Allen is

Jorgensen & Jones, owned by Otto Jorgensen and Lewis Jones, will open an appliance store in Rigby.

# Cowan Supply Gets Charter To Organize In Atlanta

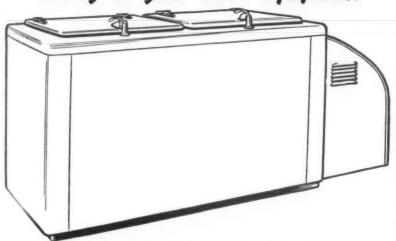
ATLANTA - The Cowan Supply Co., supply and appliance concern, has been granted a charter.

The new company plans to carry on a general wholesale and supply business, buying, selling, importing, exporting, manufacturing, and dealing in electrical, industrial, heating supplies and hardware, also to deal in house, store, office, and other furniture, carpets, fixtures and furnishing goods, electric and gas cooking, heating and lighting apparatus and other fixtures and supplies.

Incorporators are Charles G. Cowan, Joel W. Clayton, and Alvin Flannes



# FREEZER CABINETS Worthy of your BEST Equipment



## SANITARY 12.5 CUBIC FOOT MODELS AVAILABLE COMPLETE, LESS CONDENSING UNITS

Attractively modern in style, heavily built with steel welded frame, rich in many unusual and exclusive quality construction features, SANITARY Freezer Cabinets are now in limited production for shipment on a 30 to 60-day basis. Each cabinet is complete with freezer plates, cold control and "Freon-12" expansion valve requiring merely installation of your own condensing unit. Typical of SANITARY design and engineering, every detail in these Freezer Cabinets is aimed at long service life, high efficiency in food freezing and storage -at lowest operating costs.

PLACE YOUR ORDER

these "top quality" SANITARY Freezer Cabinets TODAY.

SANITARY REFRIGERATOR COMPANY

MANUFACTURER FOND DU LAC, WISCONSIN

Ice Refrigerators For More Than 40 Years Quicfrez Farm Locker Plants Since 1939

\*Bonderizing adds the value of lasting fine finish protection and corrosion control to today's refrig-

quent washings, and high humidity.

Buyers know nationally-advertised Bonderizing, expect its protection on the household appliances they buy today. Don't wait for them to ask. Tell them, "It's Bonderized."

PARKER RUST PROOF COMPANY • 2170 EAST MILWAUKEE AVENUE • DETROIT 11, MICHIGAN Bonderite-Reg. U. S. Pat. Off.

BONDERIZING **Holds Paint to Metal** 

PARKERIZING Inhibits Rust

PARCO LUBRIZING Retards Wear on Friction Surfaces

PARKER PRODUCTS CONQUER

# What Factors Will Determine Future of the Reverse Cycle Heat Pump?

# Electric Utilities See Heat Pump as Wedge For Entering Household Heating Market

NEW YORK CITY—New types of heat pumps now being developed both for heating and cooling and for water heating may prove to be a decisive weapon in the battle between the electric utility industry and its competitors for the household heating market.

A program for the development of these machines grew out of a search for a means of competing with heating by fuels and the resulting decision that the heat pump is "the one device now in prospect which seems to hold out the . . . probability that the electric utility industry can really go after the house heating business."

#### 1,000 Units Ordered

Specifications prepared under the program and sent to seven interested manufacturers called for the production of 1,000 air-to-air and water-to-air heating-cooling units, with deliveries to start July 1, 1948. The pumps would be completely automatic.

As another phase of the same program, specifications also were sent to the same producers for the manufacture of 10,000 heat pump water heaters. Shipments of these single-unit heaters were scheduled to begin Sept. 1, 1947.

The story of this program was related to members of the International Association of Electrical Leagues during their eleventh annual conference by S. W. Andrews, rate engineer for American Gas & Electric Service Corp.

(Despite its name, American Gas & Electric's business is 100% electric utility. In much of the territory where its companies operate, the corporation is in competition with natural gas, in the remainder with artificial gas, and, in suburban and rural territory away from gas lines, with bottled gas.)

"As we look at our domestic market, . . . we find that the toughest single problem facing us is house heating," Mr. Andrews told the conference. "We have had a number of instances recently where housing developments have been constructed involving small, modern two and three-bedroom houses, where the house heating is to be done with gas.

"In many of these cases, the promotors have also included gas cooking, gas water heating, and even gas refrigeration. We find it is difficult to sell electrical appliances where gas is being sold for house heating and where, therefore, additional gas use comes at the low blocks on the rate.

"To meet this competition we would like to be able to offer electric house heating to our customers at installation costs comparable to other forms of automatic house heating and at operating costs comparable to fuels. Then we will not only open up new markets for ourselves in the form of the heating load itself, but we will go a long way towards enabling the installation of electric appliances of all sorts.

### **Drop Resistance Heaters**

"We have studied the possibility of electric house heating by resistance-type space heaters. As you know, this is the most difficult of accomplishments on any really economic basis. . . .

"We made some calculations a few weeks ago on a housing project in one of the southern communities we serve and the estimated annual cost to the customer came out between two and three times the estimated cost with fuels. And so we are convinced we have to look for something else. And we turn to the heat

"The amount of heat which can be transferred by a refrigeration machine or a heat pump from a place of low temperature to a place of higher temperature is several times Editor's Note: The future of the reverse cycle or "heat pump" method of year-around air conditioning seems at the present time to depend upon two factors: (1) whether or not it can compete from a cost standpoint with other means of heating; (2) how extensively it will be promoted by the electric power companies.

One of the most comprehensive discussions of these two factors to be heard to this date was presented before the annual conference last fall of the International Association of Electrical Leagues, by S. W. Andrews, rate engineer for American Gas & Electric Service Corp.

This discussion describes the program being undertaken by utility companies in some sections of the country to promote the use of the heat pump, and includes an analysis of many of the economic factors involved.

On the pages following this article the News presents detailed descriptions of two of the reverse cycle systems which are now being produced.

the amount of heat represented by the electric energy which goes into making the machine operate. The expression which describes this is the coefficient of performance and the coefficients of performance of heat pumps now available may run from three or four to one, depending on temperature conditions.

"This means that, as contrasted with space heating, the customer may need to buy only from onequarter to one-third as many kilowatt hours as he would for heating by space heating. It means likewise that the demand created by the customer may be only from one-quarter to one-third as great as it would be for a space heating installation and, by virtue of the fact that the same unit can be operated for cooling in the summer time as for heating in the winter, the annual load factor is increased and the costs of operating and carrying the utility's enhanced facilities can be spread out over the whole year.

## Estimated Load Factors

"In many parts of the country, utility men estimate that, with year-around heating and cooling the heat pump will give annual load factors of from 25% to 35% as compared to the lower load factors for heating alone. . . .

"We have in our company had actual experience with heat pump installations for some 12 years. We have units installed in eight office buildings in different parts of our system. These units . . . range in size from 15 hp. to 50 hp. The first of these was installed in 1934-35 and the latest in 1946 (Tidd plant). . . .

"During the period that these have been installed, they have been the only heating equipment . . . in these offices. They have given satisfactory service on both the heating and cooling cycles. They have convinced us that heating and cooling by a heat pump is practical and workable. . . .

"It occurred to us this spring that . . . it would be very worthwhile if we could interest some of the manufacturers in developing a heat pump specifically designed for domestic use. There has been very little real pioneering work on this problem by the manufacturers. . . .

# Manufacturers Show 'Great Deal of Interest'

"Therefore, we prepared . . . specifications for domestic heat pumps and we sent these out to a number of manufacturers for their comments. At the same time, we sent the proposed specifications out to a great number of utility companies throughout the country asking them for their comments.

"We have now had individual talks with most of the manufacturers. . . . We have in most cases found a great deal of interest and in some cases enthusiasm. . . .

"In the case of the utility companies, we have had two general meetings, each one lasting two days, in which we had a very full and frank discussion of the heat pump from the point of view of both its commercial problems and possibilities and also from its technical and design point of view. . . .

"The discussions . . . have been very fruitful and as a result . . . revised specifications have now been sent out to the manufacturers and to the utility companies. . . .

"The specifications call for the

manufacture of a total of 1,000 units, consisting of 600 units operating on an air-to-air basis and 400 units operating on a water-to-air basis. . . .

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"In our preliminary specifications of last spring, we called for five different types of units including, in addition to these two types, a water-to-water and an air-to-water job, and one job in which a storage tank was included to act as a booster during extremely severe weather conditions.

"Our discussions with both the manufacturers and the utility companies brought out the point that, while these other types of units would unquestionably have future application, the program at this stage could be advanced and results could be secured more quickly if the number of units covered by the specifications was reduced to two.

"In our discussion with utility men at New York there was a great deal of interest in the taking of heat from the ground. We have not included in the specifications a separate unit for this type of operation, but it is of course apparent that a water-to-air job can readily be converted to a ground-to-air job by the use of a different type of coil to take the heat from the outside.

# 3-Hp. Units Planned

"All the units are to be 3 hp. single-phase jobs. This may seem at first to be a rather small unit, but we believe that this unit will be entirely capable of heating small two and three-bedroom houses, built with good insulation, and these are the type of houses which we find to be under construction at the present time throughout the country.

"In our discussions with the utilities, the point of view was advanced rather frequently that the initial market for heat pumps might be in large existing houses where people were desirous of having fully electrified homes and that, therefore, perhaps initially we ought to provide for something bigger than a 3-hp. unit

"By the end of each meeting, however, it was pretty generally agreed that the 3-hp. job would be a good place to start. After some of the 3-hp. jobs have been built and we and the manufacturers have had experience with them, it would seem that larger units, or two-stage units could be developed comparatively easily.

". . . there are six basic qualities which we have asked for: a. High reliability. b. Economical performance. c. Reasonable first cost. d Low operating cost. The unit must be highly efficient and subject to inherently low maintenance cost. e. Compactness—it must be possible to get the unit through conventional doorways. f. Neat appearance.

# Ask for Hermetics

"What we have in mind is a heat pump with a hermetically sealed compressor unit and a factory sealed refrigerant circuit which will operate with about the same trouble-free performance and the same quietness as the conventional domestic refrigerator of good design.

"It seems to us that, if the manufacturers can build machines as good as they do for domestic refrigeration purposes involving fractional horse power motors, they can design the same type of a machine for the larger size of 3 hp. None of the manufacturers seriously disputes hisability to do this.

(Concluded on next page)



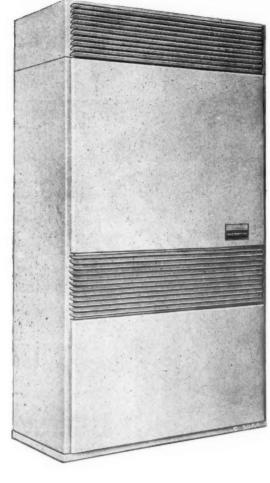
Worthington Pump & Machinery Corporation, Harrison, New Jersey

"PACKAGED"
AIR
CONDITIONING
MEETS
A VITAL NEED
FOR
SMALLER
BUSINESS
PLACES

Worthington's Self-Contained Air Conditioners — built in two sizes, 3 and 5 ton refrigeration capacities — are especially designed to suit your small or medium sized place of business. These compact, attractive cabinets are complete, factory-built air con-

ditioning systems, fully tested and proved—assuring you effective, low-cost air conditioning 365 days

With one of Worthington's Self-Contained Air Conditioners in your store, shop or office, you will be convinced that these amazingly efficient "packaged" units give you real air conditioning at its best — helping



further to promote better health and better business in every type of smaller commercial and industrial organization. For full details, write for Bulletin C-1100-B29.

Worthington Pump and Machinery Corporation, Harrison, N. J., Specialists in Air Conditioning and Refrigeration machinery for more than fifty years.

WORTHINGTON

Conditioning and Refrigeration

A6-16



#### Serving Phoenix — Served By Worthington

Occupied chiefly by the medical and related professions, the Professional Building in Phoenix, Arizona, also houses the prominent Valley National Bank and a capacious basement garage. Since its construction in the early 1930's, it has maintained practically 100% occupancy—Worthington air conditioning being one of the most important advantages enjoyed by tenants of this popular, up-to-date office building.



#### Two Good Reasons For Tenant Satisfaction

Two large-volume Worthington Centrifugal Compressors, "heart" of the air conditioning system in the Phoenix Professional Building, described above. While Worthington Centrifugal Systems are used primarily in the air conditioning field, they are ideally suited to many other applications—from cooling water or brine for industrial purposes to producing ultra-low temperatures for technical research.

### "Integration" Is A Worthington Specialty

Making more of the "vital innards" of its systems from compressors to fittings, Worthington can supply completely "integrated" air conditioning or refrigeration for maximum efficiency and economy... another reason why there's more worth in Worthington. See your nearby Worthington Distributor for further information.

# Costs of Heat Pump Seen as Competitive

(Concluded from preceding page)

"The specifications ask for performance which is better than the performance presently achieved from those units now on the market. The manufacturers, however, do not doubt their ability to meet the performance requirements. . . .

"For the air-to-air unit, the specifications call for a total kilowatt input, including compressor, fans, and all auxiliaries, of not to exceed 4.2 kw. and for a heat output of 48,000 B.t.u. per hour at 10° outdoor temperature, 70° indoor temperature, and a 100° temperature in the air which is circulated through the house. Under these conditions the coefficient of performance is 3.35...

#### Own Experience Cited

"In the case of the water-to-air unit, such experience as we have had in our own office buildings indicates that ground water temperatures, even as far north as Central Ohio, remain in the range of 40° to 50° throughout the year. Therefore, the performance requirements for the . . . unit are based on a water temperature of 50° and again 70° inside temperature and 100° temperature for the air which is circulated in the house.

"The total kilowatt input is limited to 4 kw., including compressor, conditioner fan, and water pump. The unit is to deliver 62,000 B.t.u. per hour and under these conditions to have a coefficient of performance

"With the inherent characteristic of the refrigeration cycle that for any given inside temperature the machine is more efficient the higher the temperature of the heat source, a great many people believe that in the northern part of the country perhaps only the water-to-air jobs would have application. It is unquestionably true that at some point as we go further north we will find this to be the case, but I think you might be interested to know that we have three air-to-air jobs in Ohio office buildings, one in Portsmouth and two in the vicinity of Steuben-

# 'Completely Adequate'

"The two jobs which have been in service through complete heating seasons have proven completely adequate for heating even under the most adverse conditions. The third is a brand new installation and will operate during the coming season....

"The air-to-air job is bigger in size, because it has to have two large coils for exchanging heat between the air and the refrigerant but is, of course, simpler because it needs only to have a connection to the outside air, the inside duct system, and the electrical connection. It does not have the capacity at times of low outdoor temperature as does the water-to-air unit where the water temperature stays around 40° to 50°.

"The water-to-air unit is smaller because the coil transferring heat from the water to the refrigerant is smaller than the one transferring heat from air to the refrigerant, but in the water-to-air job you have to find a source of water, which usually means either increased first cost if

you dig a well, or increased operating costs if you buy circulating water. . . .

"Another thing that we have in mind in the specifications is that the units . . . will switch over from heating to cooling automatically. Especially in the South and the Southwest where they frequently have cool nights and hot days we visualize the automatic operation of the machine on the heating cycle during the early morning and evening hours and on the cooling cycle in the middle of the day. This was stressed by the utility men at our meetings.

"The specifications also provide for the incorporation of a dehumidifier so that inside air in the house can be properly dried during hot, damp weather. This was stressed by utility men from the Southeast, especially those on the seacoast where humidity presents a very important problem. . . .

## May Take 2 Years

"It appears from our discussions with the manufacturers that it is going to take pretty nearly two years from the time they go to work on the problem until they can begin to turn out units from the production line. This being the case, it seems to us very urgent that they get to work promptly so that we will begin to get units no later than the 1948-49 heating season.

"The specifications call for quotations from the manufacturers, complete with the information requested, not later than June 1, 1947.... The specifications further provide that acceptance of the proposal will be made by the purchaser not later than Aug. 1, 1947, and that starting July 1, 1948, at least 25 units shall be shipped each week until the order is completed.

"The specifications, with the request that immediate proposal be made by the manufacturers with reference to pilot units, have been sent to seven manufacturers, who have indicated interest in the program. . . .

(Here Mr. Andrews discussed units manufactured by Drayer-Hanson, Muncie Gear Works, and The Terra-Temp Co.)

# Unit Costs In Doubt

"We do not as yet have any firm first cost figures from manufacturers because they have, of course, just begun the study of the final specifications. In October, 1945, Drayer-Hanson did quote us a price of \$1,250 for a 3-hp. job of their present airto-air design. Muncie has talked to us about a figure of \$2,100 for some initial units, which price we understand includes a large portion of the development costs and is not necessarily indicative of what final costs will be based upon full production.

"Whether a 3-hp. job eventually winds up \$800 or \$1,000 or \$1,200 or some other figure, it seems reasonably certain that the cost will be less than the combined cost of a fuelfired heating system and a separate air conditioning system.

"You have no doubt seen some discussion about what rate electric companies will need to quote for service to heat pumps. . . .

1016 E. Columbia St. Evansville, Ind.

"From the customer's point of view, we think that with expected efficiencies heat pump operation at our standard regular rates should in most cases be entirely competitive with heating by fuels. From our company's point of view, we think that with expected demands, kilowatt-hour consumptions and load factors we can afford to sell energy . . . at our standard rates. . . .

"... the specifications contemplate the utility industry ordering 1,000 units. My own company, with about 3% of residential customers of the country, plans to take 50 units or 5% of the initial 1,000. . . .

#### Water Heating Studied

"When you begin to think about the heat pump and its very efficient operation in delivering heat where you want it, the thought will probably occur to you, couldn't this be used for water heating?

"Last spring, when we drew up our initial specifications, we incorporated in them a small condenser unit which could be used for heating household water. As we went into the matter further, however, we realized that the requirements for hot water and the requirements for household heating and cooling would not necessarily occur simultaneously and that by including the water heating in the main system we might be introducing unnecessary complications. Therefore, we concluded that we had better treat water heating as a separate subject.

"A heat pump water heater also has many attractive commercial possibilities. The 5% saturation of resistance type water heaters which we have on our system is by no means satisfactory. . . we find, of

course, our biggest obstacle is operating costs.

"On our system the conventional type water heater uses about 3,600 kwhrs. a year and the customer pays us about \$40 a year and this sort of a set-up by no means meets our natural gas competition. . . .

"If we could have a heat pump water heater with a coefficient of performance of three or four or more to one, it seems to us that we ought to be able to exploit some of this market which we have not been able to really go after heretofore.

"Accordingly, we developed this spring specifications for a heat pump water heater. These also were sent out to manufacturers and have been discussed with them and were likewise discussed at our utility meetings.

"The water heater specifications, which have gone out to the same manufacturers as for the household heating and cooling job, provide for a single air-to-water design. We have asked for 10,000 heat pump water heaters broken down into 6,000 50-gallon heaters which will have ½-hp. motors, 3,000 80-gallon heaters which will have ½-hp. motors, and 1,000 110-gallon heaters which will have ¾-hp. motors.

# Desired Performance

"The performance which is asked for, based on 50-degree air temperature at the cooling surface, 50-degree incoming water temperature, and 140-degree water temperature in the tank is 5,850 B.t.u. per hour for the 50-gallon tank, 8,750 . . . for the 80-gallon tank, and 13,000 . . . for the 110-gallon tank. The coefficient of performance for these conditions is about 4.5. . . .

"If we consider the heat output of

these machines, I think you will find that it compares very favorably with the heat output of conventional reristance type heaters and they should adequately meet the customers' requirements for hot water.

"The water heater is to be built as a single unit so that it can be moved in and placed in operation by simply connecting the water lines and the electric service. Attention is given to quietness of operation, neat appearance, etc. The motors specified are single-phase, suitable for operation on either 120 or 240 volts and are to be capacitor type motors to obtain the highest power factor and efficiency.

#### Expect Heaters This Year

"Our discussions with manufacturers indicate that heat pump water heaters . . . can be offered commercially in 1947, or approximately a year before the house heating and cooling units will be available on a commercial basis. The specifications call for quotations complete with all information by Jan. 1, 1947, acceptance of the proposal to be made by the purchaser by March 1, 1947, and starting of delivery of at least 250 units a week by Sept. 1, 1947.

"While we do not have any quotations on the cost of these, it is probable that they will cost the customer about \$100 more than a resistance heater of the same tank size. As production increases, it may well be that this differential can be reduced. Commercially, we will have the problem of balancing the increased first cost against the lower operating cost and, if we find ways to utilize the cooling effect to the customer's advantage, this also will have its part. . . ."



Thus, the unique advantage of Tilco Fin design and production technique—its great flexibility without any need for special dies—is further extended.

And unchanged are the advantages of working with a plant that specializes exclusively in the manufacture of finned tubing in straight lengths—and is only interested in efficiently serving those who use such tubing.

Of course we'll welcome an opportunity to work with you -sending either our descriptive folder or specific information, without obligating you in any way.



Fins may be spaced as wide as 3 rows per inch...

Fins may be any desired height

starting with 1/4"



Fins may be spaced up to 8 rows per inch...

Tubes may be as small as 3/8" in diameter, as large as 6"

# EXTENDED SURFACE

DIVISION OF DAVID E. KENNEDY, INC.

58 Second Avenue · · Brooklyn 15, N. Y.



Motor

3 hp. 5 hp.

# 200-Ft. Well Supplies Heat from Earth For Homes In Muncie Reverse Cycle Unit

MUNCIE, Ind.—By using the heat of the earth as a source of thermal energy to heat the home, Muncie Gear Works, Inc. here has developed what it claims is a new type of heating system.

Known as Marvair, the system utilizes a water pipe heat exchanger sunk more than 200 ft. into the ground to transfer the earth's natural warmth to a house by means of a reverse cycle refrigeration system which heats the house in winter and cools it in summer, according to the company.

Marvair works something like this: A heat exchanger, consisting of a vertical U tube pipe 1 in. in diameter, is sunk into a well having a minimum bore of 4 or 5 in. and an average depth of 200 ft. below the natural water level.

According to a chart published by the U.S. Geological Survey, the temperature of water at depths of 30 to 60 ft. below the earth's surface ranges from 37° F. in the most northerly sections of the country to 77° F. in southern Florida.

Water temperature will increase 1° F. for every 64 ft. further down one goes, the company says. Water temperatures reflect earth temperatures, it points out.

In the Marvair system, cold water pumped through the heat exchanger travels down into the earth through galvanized pipe and returns, warmed, to the surface in aluminum pipe. The aluminum pipe is selected for its better heat transfer characteristics, according to Muncie.

The galvanized pipe is put through a 11/2 in. galvanized sleeve, sealed at the top to provide dead air space for insulating the inner pipe. The insulating sleeve descends 100 ft. below the natural water level.

The warm water, pumped to the surface by a horizontal centrifugal pump, flows into a water-cooled condensing coil, which serves as an evaporator during the heating cycle. There the water gives up its heat to the liquid refrigerant, causing it to evaporate.

Typical performance data on the water cooled "condensing coil" when

60,000 B.t.u.

100,000 B.t.u

Weight

Cooling Capacity @ 75° Water 32,000 B.t.u.

54,000 B.t.u.

Static

operating on the heating cycle is as follows:

Water temperature in .... Water temperature out ... 41°
B.t.u. rate per hour ... 37,100
Suction pressure .... 29.90 lb.
Suction temperature ..... 33.2° 42,200 Temperature of liquid to expansion valve .... 66.4° 75.7° Flow in gals. per hour .. 495 500 Absorbed by the refrigerant gas,

the heat is then carried to the compressor. The gas, at a higher temperature and pressure, is discharged from the compressor and moves to a finned coil through which cool air flows. On the heating cycle this coil is the condenser, warming up the air and condensing the hot refrigerant gas into liquid refrigerant which then goes to the receiver.

The finned coil is 14 rows wide and six rows deep with seven fins per inch of secondary surface. From here on, the system consists of conventional ductwork, including filters

As heat is required, the high pressure liquid refrigerant flows from the receiver through an expansion valve into the water-cooled "condenser" to repeat the cycle.

When cooling is desired instead of heating, the path of the refrigerant in the refrigeration system is reversed. The finned coil becomes the evaporator and the water-refrigerant heat interchanger becomes the con-

#### How Cycle Is Reversed

The reversal of the cycle is accomplished by the automatic operation of four solenoid valves working in pairs. One valve is located on the suction line, one on the liquid line, one in the suction by-pass, and one in the liquid by-pass.

In the cooling cycle, the suction line and liquid line valves are open and the suction by-pass and liquid by-pass valves are closed. In the heating cycle, the suction line and liquid line valves are closed and the suction by-pass and liquid by-pass valves are open.

To avoid valve chatter, to prevent excessive starting load, and to insure valve seating, the following operating sequence is followed in reversing the refrigerant flow:

1. Compressor stops.

2. Second pair of valves opens. allowing all lines to equalize.

3. First pair of valves close, allowing seating period.

4. Compressor starts under lighter load and with valves properly seated. All solenoid valves are heavy-duty, large capacity, providing abundant power for extreme operating conditions, positive in action and giving a low drop, Muncie declares. They employ 220 volt, 60 cycle coils.

Comfort is maintained in the Marvair system by a fully automatic temperature controller utilizing a balancing motor and mercury auxiliary switches. The temperature controller consists of a vapor-filled bulb which actuates the instrument bellows, which in turn, actuates the potentiometer arm.

# Setting the Controller

To set the controller, Muncie says, it is only necessary to set the indicator to the temperature to be main-The controller is factory calibrated and requires no further

The change in potentiometer arm etting causes a proportional change in the balancing motor. The mercury auxiliary switches are mounted on each end of the motor shaft and thus operated in accordance with temperature variations. These switches operate the solenoid valves. The unit is completely housed to eliminate accidental damage.

The balancing motor is of new design with all moving parts of the gear train as well as the capacitor power unit immersed in oil, according to Muncie. Periodic lubrication is not necessary. As the motor load is light and always consistent there is no danger of overload, the company says.

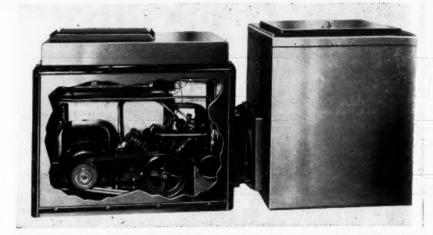
Limit switches within the motor assembly prevent any possibility of motor arm rotation past the prescribed 160°. As there is no mechanical linkage to the motor shaft, there is no danger of motor damage, ac-

cording to Muncie. Mercury auxiliary switches are employed due to the many months which elapse before climatic conditions call for a reversal of cycle, Muncie says. Because they are glass sealed, making them dust, dirt, and corrosion free, these switches are positive in action even after long inactive periods. Contact wear is negligible.

Standard, interchangeable parts are used throughout the temperature control unit, the company says.

The compressor in the refrigeration

# Two Compartments House Muncie Heat Pump



Housed in the exposed compartment at left is the condensing unit and the water-cooled condenser of the reverse cycle Marvair unit produced for home heating by the Muncie Gear Works. Compartment at right houses the evaporator coil which cools air in summer and heats it in winter.

system is a 4-cylinder V type, 1¾ in. bore by 1% in. stroke, wth cylinders cast in pairs and mounted at 90° angles. Pistons are timed to give one compression stroke per 90° of revolution. Blocks are cased so that suction gas will enter a chamber between the cylinders.

Here oil is separated and returned to the case through a check valve. The gas passes up to a cased valve plate on top of the cylinder block. This, says Muncie, results in smooth non-pulsating flow of refrigerant and exceptionally quiet operation.

A dual pressurestat with adjustment visible through an unbreakable window is provided.

Specifications for the compressor

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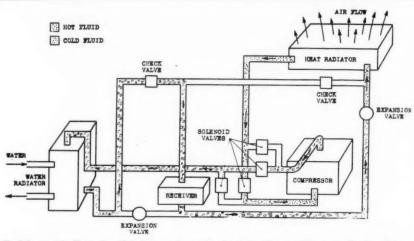
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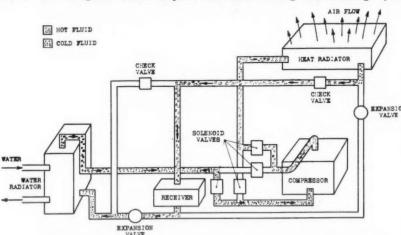
	3 Hp.	5 Hp.
RPM	1060	1265
	10.3	
CFM		18.2
Piston ft./min		369
Suction Line		11/8" o.d.
Liquid Line		36" o.d.
Refrigerant	"F-12"	"F-12"

All motors in the Marvair system are of the capacitor-start, inductionrun type. They all employ 230 volt, 60 cycle and single or three-phase current.

The compressor motor has a starting torque of approximately 300%. The air blower and water system motors have starting torques of approximately 185%.



Refrigerant flow in the Marvair unit during the cooling cycle is shown above. The diagram below depicts the flow during the heating cycle





Here's the first big improvement in low temperature insulation! E take pleasure in introducing our new Gold Bond Fireproof Refrigeration Construction. It provides greater insulating efficiency and permanence at even less cost than the old fashioned insulating methods now used! This new method, built around Gold Bond Zerocel insulation, is a result of National Gypsum Company's twenty years experience in the construction industry. It is so versatile, that with only a few changes here and there, it can solve almost any insulation problem whether for locker plants, low-temperature storage rooms, cold storage warehouses, or processing plants. If you didn't receive this new booklet explaining Gold Bond

Fireproof Refrigeration Construction at the Refrigerating and

Air Conditioning Exposition in Cleveland, write us for your

free copy today! Industrial Division, National Gypsum Com-

Just refrigeration

construction

Write for this

pany, Buffalo 2, New. York.

Specifications for Muncie's 'Marvair' Unit

Weight

Height

Fan specifications are:

# Simple Dial Control Is Feature Of 'Airtopia' Reverse Cycle Unit

LOS ANGELES—"Airtopia" is a complete air conditioning unit, consisting of a reverse cycle refrigerating system, so constructed that cooling, heating, ventilating, air filtering, humidifying, and dehumidifying are accomplished as needed.

Thus Drayer-Hanson, Inc. here describes its answer to the problem of wrapping winter heating and summer cooling into one package.

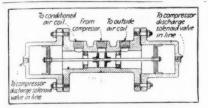
Controls to be operated by the consumer are simple in the extreme, the company says. All he must do is turn the unit on and set a dial labeled "cooler-warmer" to the temperature he likes best.

Lights on the control panel tell the consumer whether the unit is cooling or heating. If neither light is on, the unit is recirculating air.

Airtopia does its cooling-heating job through a refrigerating unit having two sets of coils sharing common fins. These coils are connected to a single compressor of 3 to 10 hp.

One set of coils, in use only during the heating cycle, has the evaporator on the "outside air" side of the unit and its condenser on the "conditioned air" side. The other set, used only during the cooling cycle, has its evaporator on the conditioned air side and its condenser on the outside air side.

The conditioned air side of the unit feeds from and into the space to be



Cross-section of the switching valve. High pressure refrigerant from the compressor, entering at top center, is switched to the right or left according to the position of the piston assembly within the valve cylinder.

conditioned. The outside air side feeds from and into the out of doors.

A piston-type switching valve, actuated by a thermostatically controlled motor and located between the compressor and the condensers, sends the high pressure refrigerant vapor to either the conditioned air

side on the heating cycle or the outside air side on the cooling cycle.

The condensers are multiple pass, high velocity, low pressure drop design. Vapor velocity is established by a jet circulator. Vapor is recirculated until condensed, according to Drayer-Hanson.

The evaporators are also multiple pass and are equipped with the Drayer-Hanson liquid distributor for equalizing refrigerant flow.

When heating, Airtopia draws in fresh air from outside. A fin coil containing warm liquid refrigerant from the receiver is placed in the path of the fresh air to raise its temperature, at the same time cooling the liquid before it goes to the evaporator.

The warmed air passes over the evaporator and gives up its heat. The air is then expelled out of doors at a lower temperature. Airtopia transfers the heat from the air to the condenser on the conditioned air side of the unit.

Air from the conditioned space is drawn through the unit and over the conditioned air condenser. It absorbs the heat from the coil and circulates it through the room.

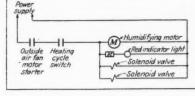
On the cooling cycle, the refrigerant in the conditioned air evaporator absorbs the heat from the air drawn from the conditioned space and passes it to the condenser on the other side of the unit. Here the warm air is expelled.

Filters on the unit remove dust and dirt during both cycles.

Moisture condensed on the conditioned air evaporator during the cooling cycle is drained to a rotating disc which throws it into the outside air stream where it is evaporated and rejected to the out of doors. On the heating cycle, moisture condensed on the outside air evaporator is drained to another rotating disc which throws it into the air stream.

Between the start of the heating cycle and the cooling cycle, there is a gap of about  $2^{\circ}$  F. through which only the conditioned air fan operates for ventilation.

An electric clock can be pre-set to start the conditioned air fan at the desired hour and let it operate for a pre-determined length of time. The control circuits are energized when this fan starts. It is always running



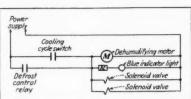


Diagram of electrical connections in heating and cooling cycles, showing how the operation of other functions is dependent on starting of fan motors. Solenoid valves control flow of high-pressure refrigerant through the expansion valves, operating in coordination with the switching valve.

while the plant is in energtion

while the plant is in operation.

Describing the system's controls,
G. E. Clancy pointed out that a
thermostat, with its temperaturesensitive bulb located in the return
air stream, controls the operation of
a reversible motor. The rotation of
the motor operates a rheostat which
supplies energy to a small solenoid.
This solenoid, in turn, exerts pressure
against the normal movement of the
thermostat arm so that for any temperature within the range of the
thermostat the motor assumes a
definite position.

The motor is provided with adjustable cams which operate switches for cooling or heating, and for changes from low speed to high speed operation in all but the 3-hp. compressor motor.

(at right) installed at the plant. Inset shows special control panel.

Here Drayer-Hanson executives study performance of "Airtopia" unit

Mr. Clancy went on:

"As the control motor turns in
the direction calling for cooling, one
of these switches closes, thus starting the ventilating motor which in
turn starts the compressor motor on
low speed.

"The compressor motor is provided with pressure-sensitive cutouts in the control circuit to protect against operation at excessively high or low pressures.

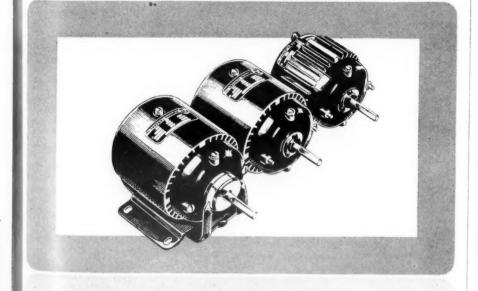
"At the same time the closing of the switch energizes the solenoid valve supplying liquid refrigerant to the cooling coil. A small solenoid pilot valve controls the operation of a high pressure, vapor operated switching valve which directs the vapor discharged from the compressor to the proper condensing unit.

"Should the operation at low speed be insufficient to correct the temperature in the conditioned space, the control motor will turn farther in the same direction, making con-

tact with another switch that turns

the compressor motor to high speed.
"It will operate at high speed until the thermostat is so satisfied that it stops the entire cycle except for the operation of the outside air fan.

"When the thermostat calls for heat, the process is identical except that the solenoid supplying liquid to the other evaporator and the solenoid pilot of the switching valve are energized instead of those used on the cooling cycle."



# How much should be expected of a small motor?

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In a year's time a Redmond AC Micromotor operating on continuous duty at 1500 RPM delivers over seven hundred million revolutions.

With only infrequent additions of small quantities of lubricant a Micromotor turns out these millions of revolutions year after year, retaining its original fine performance.

You can expect a great deal from a Redmond Micromotor, for it is engineered and built by specialists whose efforts are concentrated on small fraction horsepower motors and their applications.







# DRY AS SAHARA INSIDE



# Revere Dryseal Copper Refrigeration Tube

A DESERT is wet compared to the interior of Revere Dryseal Tube. Here is one place where a little moisture could start a lot of trouble. Could collect at the orifice of an expansion valve and freeze there. Could obstruct the orifice or make the valve "stick" and lose control. Could become a costly nuisance to you and your customers alike.

That is why each length of Revere Dryseal is so carefully dehydrated during manufacture until its interior is bone dry, and why it is then immediately sealed at both ends to keep all moisture out. This tube is made of deoxidized copper (99.9+%) pure and is kept oxide-free by special processing methods. It is dead soft so that you can bend it and work with it easily.

Made for refrigeration, air conditioning, heat control and other exacting services,

Revere Dryseal is being shipped to distributors as rapidly as Revere can produce it without lowering its top standard of quality. It comes in sizes from ½" to ¾" O.D. with .035" wall, and is standard in 50-foot coils. If you wish, a Revere Technical Advisor will gladly consult with you. Revere products are handled by leading distributors throughout the United States.



230 Park Avenue, New York 17, New York Mills: Baltimore, Md.; Chicago, Ill.; Detroit. Mich.; New Bedford, Mass.; Rome, N. Y.—Sales Offices in Principal Cities, Distributors Everywhere

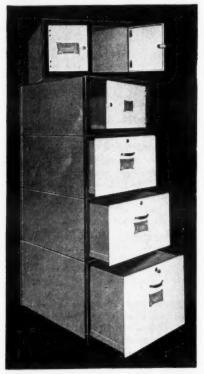
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AC Micromotors in sizes up to 1/25th hp., DC Micromotors up to 1/20th hp., controllers and blowers

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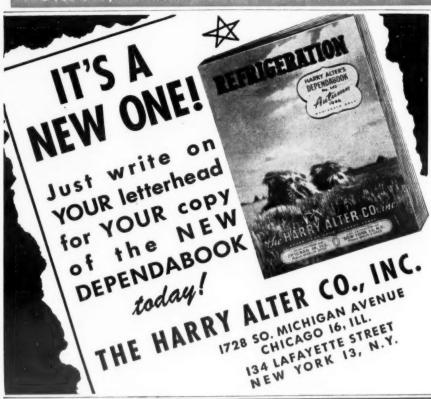
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This is the original Nolin Dry Beverage Cooler or All Purpose Refrigerator that you have heard so much about and which so many manufacturers have tried to duplicate. We are still the leaders because of the following features: One-third more coil surface, insulated for heavy duty service, individual disappearing modernistic doors, coiled freezer shelf, removable base for under bar installation, beautiful polished aluminum or stainless steel exterior. Hailed as the best cooler on the market today. Following sizes available 4', 6', 8' and 10'. Special crating for overseas shipments.

> NOLIN MANUFACTURING COMPANY, INC. 1100 MADISON AVENUE MONTGOMERY, ALABAMA (PHONE 4418)

# Store Sells All Freezers In Week; Orders Will Take Next Shipment

BOSTON-Gilchrist Co. launched the sale of Philco freezers here in December and the response by the end of the week was a sellout of the quantity on hand, with enough orders and immediate demand to take up an additional shipment which is on its way to the store, it was reported.

It was believed in the trade here that the offering was the first anywhere in the country, although this was not stated in the store's advertisement. The advertisement pulled very satisfactorily, according to store reports. The quantity of freezers in the initial stock was said to be "good." There were some still available two days after the advertisement appeared.

Priced at \$199.50, the freezer has a capacity of 200 assorted packages. Installation charge of \$6.50 is made by the store.

# **Celanese Corp. to Triple** Prepackage Wrap Output

NEW YORK CITY-Foreseeing a rapid growth in consumer acceptance of plastic wrapped fresh vegetables, which are even now gracing the refrigerated display cases of up-todate vegetable markets, Celanese Corp. has announced that it will triple its production of Lumarith transparent film, a cellulose acetate product porous enough to permit vegetables to "breathe" when pack-

To increase production, Celanese is expanding its plants in Belvidere and Newark, N. J.

Lumarith film wrapping will reduce spoilage from shipping and handling by as much as 40%, Celanese says, basing its statement on experiments conducted.

# Condenser Service Gets Big West Coast Job For Public Utility

HOBOKEN, N. J. - Condenser Service & Engineering Co., Inc., Hoboken, has been awarded a contract for constructing and installing three 70,000 sq. ft. condensers for the Wilmington Harbor Plant of the City of Los Angeles.

This is believed to be one of the largest single condenser jobs for a public utility that has ever been awarded to one company.

# Restaurant Features Walk-in for Meats

CHEYENNE, Wyo. - The Trail Coffee Shop at 216 West 16th St. has been opened for business by Ed and Lee Yarter with a refrigerated meat room which they claim is the finest, most modern in the state.

walk-in cold storage room opens off a spacious refrigerated work room, equipped with a portable air conditioning unit, where meats are prepared for the kitchen.



**Refrigeration Booklet** JAS. P. MARSH CORP.

SUPERIOR VALVE & FITTINGS COMPANY Pittsburgh 26, Pennsylvania,

# **VALVES, FITTINGS &** ACCESSORIES

For All

- Refrigeration and
- Air Conditioning Systems

# **Servicing Truck Refrigeration Units**

Editor's Note: Operation of Advance Mfg. Co.'s reverse cycle Trailaire truck unit on the heating cycle is outlined in this instalment. This series was prepared in collaboration with Henry O. Kirkpatrick, chief engineer of Advance.

# Instalment No. 17

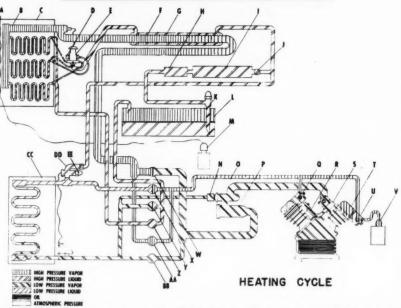


Fig. 22-When the reverse cycle Trailaire truck unit is operating on the heating cycle, the state of the refrigerant in all parts of the system is as shown in this schematic drawing. The heating cycle is also employed to defrost the evaporator coil (C).

Key to drawing: A-thermostat bulb; B-evaporator suction header; C-evaporator coil (upper); D-expansion valve adjusting stem; E-multioutlet thermostatic expansion valve; F-heat exchanger; G-heat transfer fins; H-liquid line strainer; I-dehydrator; J-liquid indicator; K-receiver service valve; L-receiver tank; M-thermostat temperature control; N-load limiting valve bellows; O-suction load limiting valve; P-suction line strainer; Q-compressor discharge service valve; R-compressor suction manifold; S-compressor suction service valve; T-compressor; Ucompressor discharge service valve; V-high pressure cut-out; W-hand valve suction (cooling); X-hand valve discharge (cooling); Y-hand valve liquid return (cooling); Z-hand valve liquid return (heating); AA-hand valve discharge (heating); BB—hand valve suction (heating); CC—condenser coil (lower); DD—thermostatic expansion valve; EE—thermostatic expansion valve adjusting stem.

# **Heating Cycle**

Trucking of produce during the cold months of winter often requires that the interior be heated to keep such produce from freezing. To fill this need the Trailaire truck refrigeration unit is designed as a reverse cycle system so that the heat resulting from the compressing of the refrigerant gas may be used to keep the truck interior at a sufficiently high temperature to prevent freezing.

The reverse cycle design also serves to defrost the evaporator coil at required intervals when the truck unit is operating on the conventional cooling cycle. On the heating cycle the Trailaire unit operates essentially the same as on the cooling cycle, the chief exception being that the upper evaporator coil (C) becomes the condenser coil to transfer heat from the hot, compressed refrigerant gas to the truck interior, and the lower condenser coil (CC) becomes the evaporator.

On the heating cycle outlet thermostatic expansion valve (E) is inoperative, and the single outlet thermostatic expansion valve (DD) at the lower coil goes into action. On the cooling cycle the latter valve (DD) is inoperative.

To run the unit on the heating cycle, the following valves must be open:

1. Heating liquid return hand valve (Z). 2. Heating discharge hand valve

(AA). 3. Heating suction hand valve (BB).

4. Compressor discharge service valves (Q) and (U). 5. Compressor suction service

valve (S). 6. Receiver service valve (K). It is also necessary that the three

following valves be closed when the unit is operating on the heating cycle: 1. Cooling suction hand valve (W).

Cooling discharge hand valve Cooling liquid return hand

valve (Y). Complete operation of the Trailaire heating cycle may be traced on the accompanying schematic draw-

ing, Fig. 22, as follows: Starting in the crankcase of the compressor, the refrigerant is in a low pressure vapor state. This low pressure vapor is compressed by the compressor and discharged into the compressor heads where the refrigerant is then in a high pressure vapor state.

The hot, high pressure vapor is forced through the compressor discharge line, passes through the open heating discharge hand valve (AA), continuing in the line up through the center of the heat exchanger (F)the heat exchanger serves no purpose on the heating cycle. From the heat exchanger the high pressure vapor continues to the upper coil (C) which serves as the condenser.

In the upper coil (C) the high pressure vapor gives up most of its heat to the cooler air blowing across the coil, thus warming up the interior of the trailer by convection and likewise causing the refrigerant gas to condense into the liquid state.

Still under high pressure, the liquid refrigerant is then forced through the heating liquid return line, the open heating liquid return hand valve (Z), the liquid return line, finally spilling into the inlet of the receiver tank (L) where there is high pressure vapor on top of the high pressure liquid refrigerant.

The high pressure liquid is forced through the submerged tube in the receiver (L) into the liquid line where it flows through the liquid line strainer (H), liquid line dehydrator (I), liquid indicator (J), and thence to the single outlet thermostatic expansion valve (DD).

As it passes through the small orifice of the thermostatic expansion valve (DD) the high pressure liquid expands and becomes low pressure liquid, picking up heat from the outside air as it moves into the lower condenser coil (CC). In this coil the liquid refrigerant evaporares as it continues to pick up heat from the outside air.

Thus, the coil (CC), which serves as a condenser coil on the cooling cycle, becomes an evaporator on the

heating cycle. The low pressure vapor is drawn through the heating suction line from the bottom of the lower coil (CC) through the open heating suction hand valve (BB), the suction line strainer (P), load-limiting valve (0), thence through the suction line to the compressor suction service valves (S) and into the compressor crankcase. Here the low pressure vapor is again ready to be compressed,

thus completing the full cycle. During the heating cycle the pres sure on the bellows of the load. limiting valve (O) is low pressure vapor, giving the valve a setting of approximately 10 lbs. gauge. Electi

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ELECTRIC

# Refrigeration Problems And Their Solution

By P. B. Reed

For Service and Installation Engineers



Manager, Refrigeration and Air Conditioning Division, Perfex Corp.

# Electric Currents (5)

all this talk about volts, s, and Ohm's Law? Why not simply tell how a motor is made and how to repair it? Just this; all this knowledge of theoretical principles is necessary to an understanding of the practical uses of electricity and he equipment works. Some of "theory" is an absolute necesas well go on a job without a tool kit as without a knowledge of why certain things happen and why certain practices are followed.

One of these "first principles" that require understanding is the relationship of the voltage, amperages, and resistance in a circuit, or part of a circuit. In the last article these relationships were traced, but although it was not emphasized, the relationships described applied especially to direct current rather than to alternating current.

How these relationships apply in the case of a.c. is very important, more important to most refrigeration men in fact, than for d.c., for the vast majority of installations of refrigeration equipment are operated by alternating rather than direct current. Since there are other factors to consider for a.c., then it is quite important to know what they are and what effect they have.

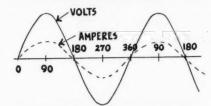


Fig. 1-Typical alternating current curves, showing the voltage and current "in phase" or in step with one another. This is true when the flow of current in the circuit is impeded by resistance only.

#### RESISTANCE IMPEDES CURRENT FLOW

Let us consider resistance espe-There are several things cially. that try to hold back or "impede" the flow of electric current through a wire or other conductor. As long as the current is flowing continuously in the same direction and with the same intensity, the resistance offered by the conductor to the flow of current is due only to: (1) the kind of material of which the conductor is made, (2) its size, that is, its cross section, and (3) its length.

1. Copper offers less resistance than aluminum, and aluminum less than iron.

2. A thick wire of large cross section offers less resistance than a small diameter (large gauge) wire. 3. A short wire offers less resistance than a long wire.

The tendency of the conductor to impede or hold back the flow of current due to these three things is called its electrical "resistance." is measured in ohms. One ohm is the resistance that permits the flow of one ampere of current at a pres-

affect the relationship between the voltage or pressure of the electric current nor the rate of current flow as measured by the amperes. They stay "in step" with one another; one rising as the other rises and falling as the other falls. This is shown in

many times a second.

(To Be Continued)

# 3 Organize Service Firm In Fort Atkinson, Wis.

FORT ATKINSON, Wis.-The Refrigeration Service, Inc., has been incorporated here by Harley N. Hammon, Arnold V. Land, and Earl W. Dennis, to install, sell, and service all makes of refrigeration units. Sixty shares of capital stock at \$50 par value have been authorized.

sure of one volt.

Resistance of this sort does not

Fig. 1. Note that resistance is the only thing that impedes the flow of current if the current is flowing in the same direction and with the same intensity; that is, without interruption and without change in value, as with direct current at constant load. Resistance is not the only thing when the flow of current is interrupted either starting or stopping, or if it changes in intensity; so resistance is not the only thing that impedes the flow of a.c. which changes direction and instantaneous values

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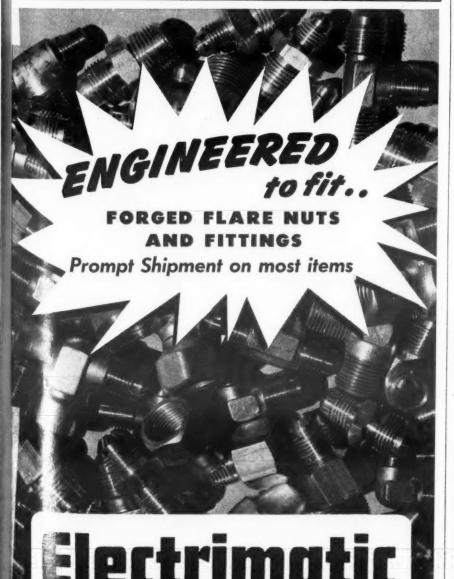
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# **PATENTS**

# Week of Nov. 26 (Continued)

AVAILABLE FOR LICENSING OR SALE

The following patents are offered by Allin B. Crouch, Trustee, 1412 Clifton Park Road, Schenectady, N. Y., for non-exclusive licensing on a royalty basis:

Pat. 1,964,890. CONDENSER. Patented July 3, 1934. Group 35-84. Reg. No. 4,287. Pat. 2,008,809. COMPRESSOR. Patented uly 23, 1935. Group 35—84. Reg. No.

ADJUSTABLE CLEAR-2,047,167. Pat. MECHANISM. Patented July 7, Group 35-84. Reg. No. 4,289.

2.015.487. REVERSIBLE EXPAN-MEANS FOR INTERCHANGEABLE CONDENSER AND EVAPORATOR FUNC Patented Sept. 24, 1935. Group Reg. No. 4,290.

TEM FOR COOLING OR HEATING. Patented Sept. 27, 1938. Group 35—84. Reg. No. 4,291. REFRIGERATING SYS-

APPARATUS FOR COM-Pat. 2,024,323. PRESSING GASEOUS FLUIDS. Patented Dec. 17, 1935. Group 35—84. Reg. No.

Pat. 2,024,728. RESILIENT SUPPORT. Patented Dec. 17, 1935. Group 35-84. Reg. No. 4,293.

CUSHION SUPPORT. Pat. 2.052,589. Patented Sept. Reg. No. 4,294. 1, 1936. Group 35—84.

Pat. 2,027,058. METHOD AND AP-PARATUS FOR AIR CONDITIONING. Patented Jan. 7, 1936. Group 35—84. Reg. No. 4,295.

Pat. 2.031,614. VALVE MECHANISM AND ACTUATING MEANS THEREFOR. Patented Feb. 25, 1936. Group 35—84. Reg. No. 4 296 Reg. No. 4,296.

2,033,063. MEANS FOR CON-TROLLING REFRIGERATING APPARA-TUS AND INTERCHANGING THE FUNCTIONS OR COMPLEMENTARY HEAT EXCHANGE ELEMENTS THERE-OF. Patented March 3, 1936. Group 35—84. Reg. No. 4,297.

2.052.561. MEANS FOR INTER-CHANGING COMPRESSOR AND CON-DENSER FUNCTIONS OF A REFRIG-ERATING SYSTEM AND CONTROLLING A COMPRESSOR THEREFOR. Patented Sept. 1, 1936. Group 35—84. Reg. No.

AIR CONDITIONING Pat. 2,047,169. APPARATUS. Patented July 7, 1936. Group 35—84. Reg. No. 4,299.

2.048.282. CONDENSATE CON-TROL MEANS FOR AIR CONDITIONING APPARATUS. Patented July 21, 1936. Group 35—84. Reg. No. 4.300. Pat. 2,054,350. AIR CONDITIONING

APPARATUS. Patented Sept. 15, 1936. Group 35—84. Reg. No. 4,301. Pat. 2.055,780. RESERVE REFRIGER-

ANT SUPPLY AND APPARATUS. Patented Sept. 20, 1936. Group 35—84. Reg. Pat. 2,062,435.

METHOD AND MEANS OF DETECTING REFRIGERANT LEAKS. Patented Dec. 1, 1936. Reg. No. 4,303. Group 35-84.

AUTOMATIC OIL SEPA Pat. 2,065,195. RATOR CONTROL FOR REFRIGERAT-

ING SYSTEMS. Patented Dec. 22, 1936. Group 35—84. Reg. No. 4,304. 2,065,445. AIR DISTRIBUTING EM. Patented Dec. 22, 1936. Group

35—84. Reg. No. 4,305.
Pat. 2,073,891. MEANS FOR INTER-CHANGING THE FUNCTIONS OF COM-PLEMENTARY HEAT EXCHANGE ELE-

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# MENTS. Patented March 16, 1937. Group 35—84. Reg. No. 4,306.

Pat. 2,081,553. AIR CONDITIONING APPARATUS. Patented May 25, 1937. Group 35—84. Reg. No. 4,307.

Pat. 2,081,845. REVERSIBLE REFRIG-ERANT EXPANSION MEANS. Patented May 25, 1937. Group 35—84. Reg. No. 4,308.

Pat. 2,085,703. AIR CONDITIONING APPARATUS. Patented June 29, 1937. Group 35—84. Reg. No. 4,309.

Pat. 2,091,774. MUFFLER-FILTER AP-PARATUS FOR AIR FLOW PASSAGES. Patented Aug. 31, 1937. Group 35—84. Reg. No. 4,310. EXPANSION VALVE

2,091,787. EXPANSION 2.091,787. FOR REFRIGERATING NISM FOR REFRIGERATING 21 1937. Group MECHANISM SYSTEMS. Patented Aug. 31, 1937. Group 35—84. Reg. No. 4,311.

Pat. 2,105,205. AIR CONDITIONING APPARATUS. Patented Jan. 11, 1938. Group 35—84. Reg. No. 4,312. Pat. 2,111,133. CONDENSATE EN-

Pat. 2,111,133. CUNDENSALE
TRAINMENT MEANS. Patented March
15, 1938. Group 35—84. Reg. No. 4,313.
Pat. 2,111,570. LIQUID CONTROL MEANS FOR AIR CONDITIONING APPARATUS. Patented March 22, 1938.
Group 35—84. Reg. No. 4,314.

2,145,380. CONDENSATE POSAL MEANS FOR AIR CONDITION-ING UNITS. Patented Jan Group 35—84. Reg. No. 4,315. Jan. 31, 1939.

Pat. 2.113,691. COMPRESSOR. Patented April 12, 1938. Group 35—84. Reg. No.

COMPRESSOR-UN-2,156,943. LOADER STRUCTURE. Patented May 2, 1939. Group 35-84. Reg. No. 4,317. 2,121,837. AIR CONDITIONING

APPARATUS. Patented June 28, 1938. Group 35—84. Reg. No. 4,318. Pat. 2,112,870. SELF-CONTAINED AIR CONDITIONING ROOM UNIT. Patented April 5, 1938. Group 35–84. Reg. No.

Pat. 2,131,544. ROTARY SEAL. Pat-nted Sept. 27, 1938. Group 35—84. Reg. ented

No. 4.320. Pat. 2,134,349. CONDENSATE DIS-POSAL MEANS FOR AIR CONDITION-

ING APPARATUS. Patented Oct. 1938. Group 35—84. Reg. No. 4,321. Pat. 2,145,575. REVERSING VALVE MECHANISM. Patented Jan. 31, 1939. Group 35—84. Reg. No. 4,322.

2,145,909. PROTECTIVE CONTROL CIRCUIT AND APPARATUS. Patented Feb. 7, 1939. Group 35-84; 36-19. Reg.

Pat. 2,148,596. AIR CONDITIONING UNIT. Patented Feb. 28, 1939. Group

55—84. Reg. No. 4.324.
Pat. 2,157,047. COMBINED AIR CONDITIONING UNIT AND HAIR DRIER.
Patented May 2, 1939. Group 35—84. Reg. No. 4,325. PORTABLE ROOM 2.163,691.

COOLING UNIT. Patented June 27, 1939. Group 35—84. Reg. No. 4,326. Pat. 2,250,978. AIR CONDITIONING APPARATUS. Patented July 29, 1941. Group 35—84. Reg. No. 4,327.

Pat. 2,276,814. REFRIGERATION SYS-EM. Patented March 17, 1942. Group

-84. Reg. No. 4,328. FABRICATED STRUC-Pat. 2.071.366. TURE FOR AIR CONDITIONING UNITS. Patented Feb. 23, 1937. Group 35—84.

Reg. No. 4,329. 2,130,327. AIR CONDITIONING

Pat. 2,130,321. AIR CONDITIONING APPARATUS. Patented Sept. 13, 1938. Group 35—84. Reg. No. 4,330. Pat. 2,132,372. AIR CONDITIONING APPARATUS. Patented Oct. 4, 1938. Group 35—84. Reg. No. 4,331.

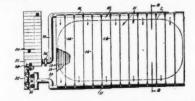
Pat. 2,285,087. AIR CONDITIONING APPARATUS. Patented Jan. 2, 1940. Group 35—84. Reg. No. 4,332. Pat. 2,289,085. AIR CONDITIONING APPARATUS. Patented Jan. 2, 1940.

2,289,035. AIR CONDITION 2,289,035. AIR CONDITION 7, 1942. APPARATUS. Patented Ju Group 35-84. Reg. No. 4,333.

Re. 22,058. AIR CONDITIONING UNIT. Reissued April 7, 1942. (Original No. 2,058,405, dated Oct. 27, 1936.) Group 35-84. Reg. No. 4,334.

# Week of Dec. 3

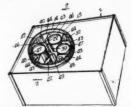
2,411,919. ICE RINK. Frank J. Zam. boni, Hynes, Calif. Application Sept. 16, 1944, Serial No. 554,481. 14 Claims.



11. In a skating ring, the combination of a rink floor, a brine receiving con-tainer, a suction pump arranged to discharge into said container, a brine cir-cuit including a supply line and a return line and a portion interposed between nne and a portion interposed between said lines, said portion having the top thereof arranged to form said rink floor, said supply line having an inlet end portion communicating with said container, said return line being connected to the intake of said suction pump, and means for lowering the temperature of

the brine circulating through said circuit, the parts being so constructed and arranged that the pressure in the line in heat exchange relation with said floor is maintained at sub-atmospheric pressure.

2,412,068. ROTARY ICE CREAM DIS-PENSING CABINET. Arthur H. Spader, Bergenfield, N. J. Application June 13, 1944, Serial No. 540,099. 16 Claims. (C1. 62-89.)



A cabinet comprising an upright circular refrigerated chamber having a relatively small stationary top opening, a movable cover for said top opening, a shaft mounted axially of said refrigerated chamber, a circular upper rack rotatably mounted on said shaft and subdivided into a plurality of open top compartments at least one of which is also open at its

bottom, said upper rack having means for selectively centering its compartments in vertical registry with said stationary top opening, means including a series of stationary vertically extending blades spaced circumferentially of the outer side of said upper rack for removing portions of the frost formations building up on the adjacent surface of said extending the said exten uilding refrigup on the adjacent surface of said leftigerated chamber as the same is being rotated therein, a circular lower rack rotatably mounted on said shaff subdivided into a plurality of compartments, said lower rack having means for selectively centering its compartment is in selectively registry with the opening the output of the same selectively centering its compartment is in the same selectively centering its compartment is in the same in the same is the same is being rack. up on the adjacent surface of said vertical registry with the opening to the upper rack when the latter registry with said top opening, mea ough of said refrigerated chamber as the is being rotated therein, and a series of stationary blades remounted on the bottom of said rack for removing frost formations the adjacent bottom surface of sa frigerating chamber as the same is rotated therein. (To Be Continued)

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VETERAN OF World War II, married age 35. Will consider steady employment in either factory or field work in any eastern state. Considerable experience in electric refrigeration. Experience also in other mechanical fields. BOX 2198, Air Conditioning & Refrigeration News

YOUNG MAN 34, married, desires position as instructor in trade or technical school. Three years experience teaching domestic commercial, and air conditioning theory and laboratory; eleven years field ex-perience. Will consider employment in perience. Will consider employment is South America for a responsible refrig eration or air conditioning firm. Air Conditioning & Refrigeration News.

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WANTED: SALES engineer. York Dis-tributor for Westchester County, N. Y. has opening for sales and estimating engineer in air conditioning, commercial refrigeration. G & N REFRIGERATION CORP., 258 E. 3rd St., Mt. Vernon, N. Y.

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SALES ENGINEER-G.E. commercial refrigeration distributor in northern New Jersey requires services of energetic ap-plication's engineer capable of taking full charge of our air conditioning and indus-trial refrigeration department. Must be experienced. College education preferred. State all qualifications including starting salary. BOX 2200, Air Conditioning & Refrigeration News.

OPPORTUNITY - LEADING compressor manufacturer desires sales engineer for midwest territory. College graduate in engineering preferable but not necessary. Age limit 31. Adequate salary and exage limit 31. Adequate salary and expenses for probably the first year, incentive arrangement thereafter. Write giving full details and appointment will be arranged. BOX 2202, Air Conditioning & Refrigeration News.

ENGINEER—YOUNG mechanical engineering graduate with some refrigeration experience preferable but not necessary, eastern compressor manufacturer

assistant to chief engineer. compensation and unlimited opportunity for right man. Will be necessary to live in east. Write full details. BOX 2203, Air Conditioning & Refrigeration News.

NEW YORK City air conditioning instal-lation contractor desires experienced en-gineer able to handle all phases of comfort conditioning, from initial survey to supervision. Practical "know-how" more important than degree. Firm medium sized, long and well established, growing steadily. Real opportunity. Give full particulars in confidence. BOX 2205, Air Conditioning & Refrigeration News.

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REACH-IN REFRIGERATORS, dry beverage coolers, home and farm freezers, ice cream cabinets, open type frozen food cases with superstructure. All equipment with and without units. Immediate delivery, attractively priced, exclusive distributorships available. GENERAL REFRIGERATORS CORP., 678 Broadway, New York (12) ST 9-1222.

CONDENSING UNITS, new, immediate delivery. ½ hp., air cooled, complete with motor and control. Also, limited stock, 34 hp., 1 hp., and 1½ hp., new motors, heavy duty, repulsion induction type. KOLD DRAFT COLUMBUS, 27 N. Nelson Road, Columbus 3, Ohio. Evergreen 0220.

FOR SALE-new in stock for immediate FOR SALE—new in stock for immediate shipment. 1500 watt and 5000 watt, 115 volt, A.C. Single phase. Fully-automatic, 4 cylinder water cooler Kohler plants, complete with fuel tank, fittings and starting battery. Ideal stand-by for food preservation. Write or wire. E. E. PAULLY & CO., dealers, Cheboygan, Mich.

COMPRESSORS AND PARTS rebuilding-Compressors, float valves, water valves, low pressure controls, evaporators, water cooled condensers, condensing units and many other items replaced from our large stocks, or repaired upon receipt of your defective material. Send for our catalog-prices listed. REFRIGERATION MAINTENANCE CORP., 321 E. Grand Ave., Chicago, Ill.

FREEZER PLATES-all new Stangard-Dickerson—14 size 21 x 72, \$26.25 each, 62 size 21 x 60—\$22.97 each, 33 size 21 x 48—\$19.39 each, 2 size 24 x 72—\$28.95 each, 9 size 24 x 60—\$24.75 each, 8 size 24 x 48— \$21.29 each, F.O.B. Dayton. REFRIGERA-TION SERVICE SHOP, INC., Monument and Stratford Aves., Dayton 2, Ohio.

NEW MOTORS—ten 3 hp—220-440 volt—3 phase— 60 cycle—A.C. Electric compressor duty motors. All new, Wagner, Century. \$95 each. F.O.B. Dayton. REFRIGERATION SERVICE SHOP, INC. Monument and Stratford Aves., Dayton

AIR CORPS oxygen cylinders—can be used as portable four pound "Freon" drums. Bursting pressure 2200 lbs. Stainless steel. 5 in. diameter by 8 in.

long. Light, convenient. \$1.25 eacl plus postage, while balance of 200 last. immediately. D. L. ROUSEY, 5545 orth Magnolia Ave., Chicago 40, Ill. orth

FLOAT REPLACEMENTS. For r placing defective high side floats of all household units. Regular charging connection, capillary tube setup, in strainer and exact mounting plate. #2000-Westinghouse (4 hole plate) plate). #2010 (3 hole plate); Part #2020-Gibson;
Part #2030-General Electric (DR-1 &
DR-2). Part #2040-For general replacement (undrilled plate). \$6.75 each
SEALED UNIT PARTS CO., 3097 Third Ave., New York 56.

SEALED CROSLEY TERMINALS. stalled from the outside in a few minutes without opening the compressor. Corrects leaky terminals on all Crosley "F-12" units. Set of three \$6.75 (Part No. 1020). Installation tool \$1.65. Immediate delivery.
Money-back guarantee. SEALED UNIT
PARTS CO., 3097 Third Ave., New York 56, N. Y.

FRIGIDAIRE METER-MISER Terminals. m the inside. Find bottom-mounted terr Installed from the inside. Fits compres (Part No. 1060.) Set of three \$2.85. WESTINGHOUSE TERMINALS. Installed from the inside. (Part No. 1030.) Set of three \$2.85. SEALED UNIT PARTS CO. 3097 Third Ave., New York 56, N. Y.

NORGE CHECK VALVES. For open-type units. (Part No. 1040.) \$2.55 each SEALED NORGE terminal, packing wash-For repairing leaky terminals Installed from the outside in a few minutes. (Part No. 1050.) Three sets (9 washers) \$1.00. SEALED UNIT PARTS CO., 3097 Third Ave., New York 56, N. Y.

SEALED NORGE terminals. Complete as sembly. Replaces shorted terminals Installed from inside. (Part No. 1100.) Set of three \$2.85. Sealed Crosley termi-. Installed from inside. Part No. for SO2 models. Part No. 1080 for "F-12" models. Part No. 1090 for "F-21" models. Set of three \$2.85. SEALED UNIT PARTS CO., 3097 Third Ave., New York 56. N. Y.

UNDERBAR WORKBOARDS, stations, dry beverage coolers, and beer dispensers designed for water bath, circulating air, Temprite tanks and Penflo cooling systems, for immediate delivery, by one of the oldest bar interior equipmanufacturers SUPREME METAL FABRICATORS, INC. 27 Rodney St., Brooklyn 11, N. Y.

SECTIONAL WALK-IN coolers made of plastic plywood 4 in. and 6 in. of Fiberglas insulation. 8 ft. x 8 ft. x 7 ft. high Write for prices and literature. ZERO REFRIGERATION CO., Saukville, Wis.

NEW ALL-STEEL sectional walk-in cool ers available for immediate delivery at attractive prices. Write for specifications and quotations, BOX 2188, Air Conditioning & Refrigeration News.

AIRFLOW CONDENSING units—½-hp. twin-cylinder, 580 r.p.m., 4020 B.t.u. at 20 degrees suction and 90 degrees ambient flywheel and fan-belts. Price, less motor \$88 in lots of 6 or more, f.o.b. N.Y.C. BOX 2189, Air Conditioning & Refrigers

BARGAIN 50 brand new 121/2-cu. ft. farm and home freezers complete with valve control and less condensing units. All if original crates at \$207.50 each. Reason for sale, must reduce inventory, Will sall or part. Write or wire BON 2188. Air Conditioning & Refrigeration News.

FOR SALE 7500 1/250th hp. 15000 R.P.M. 30 Watt ¼ in. shaft shaded poly A.C. Motors in black round steel cas \$2.8 each. Net F.O.B. Whse. BOX 21 /7, Altr. Conditioning. Conditioning & Refrigeration New

12—1—1½—2 hp. condensing unit complete with single phase motors. M at and bone cutters complete with both 1 and 1½ hp. motors. BOX 2204, Air Conditioning & Refrigeration News.

# FRANCHISES AVAILABLE

AGENTS WANTED throughout the Unite States and Foreign Countries to all I tionally advertised line of contents units. State territory desired an other contents countries to all I tionally advertised line of contents countries. handled or present con-Our present employes and agent know of this advertisement. Answers will be held in utmost confidence. BG 2288 Air Conditioning & Refrigeration News. vill be

# BUSINESS OPPORTUNITIES

WELL ESTABLISHED refrigeration. conditioning, heating and radio in southeast Missouri, Franch in southeast Missouri. Franchises boll domestic dealership and commercial distributorship. Plenty of sales and service or will sell separately from rest of busic ness, domestic refrigeration and appliance line, and radio shop. BOX 2199, Air Con-ditioning & Refrigeration News. BOX 2199, Air Con-

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# Largest Latin American Firm' Begins Manufacture of Appliances In Mexico

PI' TSBURGH-Limited production of el ctrical equipment ranging from moto's and generators to household appli nces was scheduled to begin by nd of 1946 at the plant of Industria Electrica de Mexico, S. A., \$15,000,000 company said to be the largest of its kind in Latin America.

Formed as the result of technical financial cooperation between American and Mexican resources, the concern will manufacture the products under exclusive contract with Westinghouse Electric Corp., according to a Westinghouse announcement.

Site of the new plant is a 190-acre tract located north of Mexico City. Original buildings, which will contain an area of approximately 650,000 sq. ft., are designed to permit expansion

of the plant to double its present size. "Production according to American methods and standards is made possible by a long term license agreement with Westinghouse providing for all technical phases of modern

# 1st British Home Freezer Has 'Domestic' Section

LONDON - A two-door home freezer containing both frozen food and "domestic" compartments is now being produced here by Messrs. R. B. C. Ldt. It is thought to be the first frozen food cabinet designed and made in Britain.

The 91/2-cu. ft. frozen food compartment is divided into four sections, two for quick freezing, and two for storage. A temperature of -30° F. can be obtained in the quick freeze sections, it is claimed.

Capacity of the domestic compartment is given as approximately 2 cu. ft. and the temperature range as 28 to 32° F. This part is designed to hold such foodstuffs as milk, butter, eggs, and cheese.

Considered suitable for the processng of fruit, vegetables, and meat, the freezer is said to have a capacity of 506 lbs. of meat or similar quantities of other commodities. The freezing section is equipped with four vacuum plates and is operated by a 1/3-hp. condensing unit.

The manufacturer is said to be considering incorporation of a "vacnumed condition" of the cabinet interior to give ultra-rapid freezing, decreased humidity of the cabinet by exhaustion of air, and shorter running of the unit. With this arrangement, the exhauster would operate only when the unit cuts in, if the vacuum control switch allows, or when the vacuum is broken by insertion of new commodities to be

# Paley Names Export Agent

BROOKLYN - Appointment of American Refrigeration Export Co., of Nev York City, as its exclusive agent 'or export sales was announced recent y by Paley Mfg. Corp., producer of self-service frosted food cabine s. Paley said plans are being made o promote world-wide sales of

plant layout, operation, and product design," the announcement said.

"The Mexican company will be furnished with complete specifications and drawings for all products manufactured, as well as information on production methods.

"The technical agreement also includes training of Mexican personnel in manufacturing and business procedures. Over a number of years selected groups of trainees are to be brought to the United States for practical training in Westinghouse plants. These men will return to form the nucleus of a technical and supervisory staff for the company, which is expected eventually to provide work for approximately 2,000 employes."

Because of the magnitude of the enterprise, some time will be required to achieve full-scale operation. During this period, volume will be increased by the considerable use of products and sub-assemblies from Westinghouse plants, the corporation

Preliminary surveys by Inversiones Latinas, an investment company interested in Mexico, are said to have indicated a large and steady market for electrical equipment in Mexico. Immediate demand for the new company's products is expected to be about \$10,000,000, with a big increase looked for by 1951.

"These figures indicate that Industria Electrica will take an immediate place in the Mexican economy," Westinghouse observed. "Although 70% of its 20,000,000 population is still agricultural, Mexico has developed a great demand for industrial products during recent years."

Products slated for manufacture include home appliances, such basic equipment as transformers, circuit breakers, panelboards, and distribution panels, motors, and controls, and electrical household materials of

# Jordon Brochure Aimed At Latin American Trade

CLEVELAND-Release of a brochure on Jordon Refrigerator Co. products printed in Spanish and Portuguese for the Latin American trade was announced recently by Maurice Zatko, head of the firm's export department.

In laying emphasis on its export trade, particularly to Latin America and Canada, the company expects to publish a catalog in Spanish and Portuguese, Mr. Zatko asserted.

He added that the brochure just released is the first of a series of foreign language brochures that Jordon intends to print.

Jordon is already making shipments of refrigeration units to Venezuela, Brazil, Colombia, Mexico, Puerto Rico, and Canada, according to Mr. Zatko. The firm is receiving inquiries about its products from India and Europe, he said.

The refrigeration export business will get a great impetus as soon as import regulations are lifted, Mr. Zatko believes.

# Domestic-Box Exports Top '36-'38 Average

WA HINGTON, D. C. - August Was the first postwar month in which of household refrigerators surpas d the 1936-38 monthly average, a ording to foreign trade stareported by the Office of international Trade, U. S. Department o Commerce.

During that month, 14,226 domestic efrigerators, valued at \$1,663,000, ere shipped abroad. This compares with the prewar monthly average of 13,046 units having a total value of \$980,000

Other third quarter statistics on otal quantity and value are: July, 7,954, \$911,000; September, 5,035, \$617,000.

After passing the 1936-38 monthly average of \$1,604,000 in June with a total value of \$1,912,000, exports of "electric refrigerators and parts" dropped to \$1,715,000 in July but rose to \$2,833,000 in August. September marked another recession \$1,236,000.

Total values of exports of "electrical appliances (household and domestic, except lamps)" were given as follows: July, \$942,000; August, \$1,248,000; September, \$1,012,000. The prewar average was \$466,000.

How Many Went Abroad and Where They Went

# '45-'46 Refrigerator, Appliance Export Totals

(Statistics assembled by the Special Programs Division, Areas Branch, Office of International Trade, Department of Commerce, from the monthly foreign-trade reports of Bureau of the Census.)

Exports of Leading Commodities and Commodity-Groups: Total and Cash; and Percentage of Lend-Lease and UNRRA in Total

(Value in millions and tenths of millions of dollars. Total exports include lend-lease, UNRRA, and cash exports. Lendlease figures after the close of the war in September 1945 covers supplies which recipient nations arranged to finance.)

	———Quantity—							nue		
	1936-38 Quar- terly Average	July- Sept. 1945	Oct Dec. 1945	Jan Mar. 1946	Apr June 1946	1936-38 Quar- terly Average	July- Sept. 1945	Oct Dec. 1945	Jan Mar. 1946	Apr June 1946
Electric Refrigerators and Parts	****	****		****		4.8	1.0	2.1	3.8	4.5
Household Refrigerators, number	39,138	2,461	3,243	13,512	17,816	2.9	.1	.3	1.4	1.9
Electrical Appliances: Household & domestic, except lamps			1 9	****	****	1.4	.4	.8	1.5	2.3
		lease as p y-Sept. 19		of Total prJune			RRA as y-Sept. 1		of Total V prJune	
Electric Refrigerators and Parts		1.7		.2					.8	
Household Refrigerators Electrical Appliances:		<b>(y)</b>		(y)						
Household & domestic, except lamps	3	3.7		.2					<b>(y)</b>	

#### Exports\* of Selected Commodities to Leading Countries and Areas

	Millions	and tenths	of millions of dollars)					
Commodity Consumer Durable Goods	Canada	American Republics	United Kingdom	Continental Europe†		Far East	Other	Total
Household Refrigerators:								
1938 Quarterly Average	0.2	0.7	0.2	0.4	(x)	0.4	0.7	2.7
OctDec. 1945	(x)	.2	****	(x)	****	(x)	(x)	.3
AprJune 1946	.2	1.0	(x)	.1	****	.1	. 5	1.9
Electrical Appliances:								
1938 Quarterly Average	.4	.3	.3	.2	(x)	.2	.3	1.6
OctDec. 1945		.2	(x)	(x)	(x)	(x)	.1	.8
AprJune 1946	.7	1.0	(x)	(x)	(X)	3	.3	2.3
(x) Less than \$50,000.								

Exports of United States Merchandise. † Continental Europe Excluding U.S.S.R.

(y) Less than one-tenth of 1 percent.

# LESS THAN 18 MONTHS

# 18,000 16,000 14,000 12,000 10,000 8,000

**NET PAID** CIRCULATION (as of Nov. 15, '46)

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\*From ABC report for six months ending June 30, 1946

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BUSINESS NEWS PUBLISHING COMPANY . 450 W. FORT ST., DETROIT 26, MICHIGAN

# Heating, Ventilating Show Opens Jan. 27

(Concluded from Page 1, Column 5) the ASHVE and the warm air group. Among the events scheduled for ASHVE is the dedication of the society's new research laboratory, located at 7218 Euclid Ave. here. Opening session of the annual meeting Monday morning, Jan. 27, will be held at the laboratory for the dedication ceremonies and regular business, along with the presentation of one technical paper, and announcement of election results.

Other technical sessions will be held Tuesday morning and afternoon, Jan. 28, Wednesday morning, Jan. 29, and Thursday morning, Jan. 30. These sessions will be held in the Hotel Statler. On Thursday aftermon the ASHVE will hold a joint meeting with the National Warm Air Hetting & Air Conditioning Association to hear two technical papers.

Social events of the week will include entertainment for ASHVE members and guests Monday evening at the Statler, a social hour at 5:30 p.m. Tuesday, and the annual banquet in the Hotel Statler ballroom at 7 p.m. Wednesday. Numerous inspection trips are also planned.

The two-day convention of the National Warm Air Heating & Air Conditioning Association at the Hotel Cleveland will feature 13 addresses on all phases of the members' operations, in addition to the two technical papers to be presented at the joint meeting with ASHVE. Besides discussions on the technical side of the business, members will hear discussions on sales promotion programs.

Complete programs for both the ASHVE and warm air group's conventions follow:

#### ASHVE Program

#### Sunday, Jan. 26

10 a.m.-Committee meetings. 1 p.m.-Registration (Hotel Statler). 1:30 p.m.—Council meeting. 2 p.m.-Committee meetings.

Monday, Jan. 27

8:30 a.m.—Registration (Hotel Statler). 10 a.m.—Opening session (Research aboratory). Dedication of Research Laboratory). Dedication of Laboratory; reports of officers.

"Air Flow into Suction Openings," by A. D. Brandt and R. J. Stoffy. Reports of committees; report of tellers of election.

12 Noon—Research luncheon (Quad Hall Restaurant, 7500 Euclid Ave.). 12:45 p.m.—Inspection trips: 1:15 p.m.—visit to Nela Park Lighting Institute;

3:45 p.m.-visit to AGA Laboratory. p.m.-Opening of exposition (Lakeside

2:30 p.m.—Chapter delegates meeting

Research Laboratory).

9: 30 p.m.—Operation Relaxation (Hotel Statler Ballroom). Informal musical and comedy program with one act play by Chagrin Valley Little Theater.







#### Tuesday, Jan. 28

8:30 a.m.-Registration (Hotel Statler). a.m.—Technical session (Hotel Statler, Grand Ballroom).

"The Effect of Moisture Content on the Diffusion of Odors in Air," by Richard L. Kuehner. "Dehumidification-Methods and Appli-

ations," by John Everetts, Jr.
"Rating Dynamic Dehumidification Equipment," by E. R. Queer and E. McLaughlin.

2 p.m.—Panel and radiant heating forum. 5:30 p.m.—Social hour (Hotel Statler, Euclid Room). 6:30 p.m.—Past presidents' dinner (Hotel

Statler, Tayern Room).

#### Wednesday, Jan. 29

8:30 a.m.—Registration (Hotel Statler). 9:30 a.m.—Technical session (Hotel Statler, Grand Ballroom). "Practical Considerations in Determining Human Tolerance to Heat," by Willard Machle, M. D.

"Methods Used in Determining Health

Hazards Arising from the Inhalation of Various Chemicals," by F. F. Heyroth. "Minimum Replenishment of Air for

Living Spaces Under Conditions of Mechanical Cooling," by W. V. Consolazio. 12:45 p.m.—Inspection trip: visit to laboratory of National Advisory Committee for Aeronautics.

2 p.m.—Chapter delegates meeting (Hotel Statler, Lattice Room).

7 p.m.—Annual banquet (Hotel Statler Ballroom). Toastmaster: L. T. Avery; presentation of past president's emblem.

#### Thursday, Jan. 30

9:30 a.m.—Technical session (Hotel Statler, Euclid Ballroom).

"Response and Lag in the Control of anel Heating Systems," by F. W. Hutchinson.

Unfinished business: new business: installation of officers.

2:30 p.m.—Joint session with National Warm Air Heating and Air Conditioning Association.

Proposed Design Procedure for Large, Mechanical Warm Air Heating Systems," by Prof. S. Konzo.

"Bacterial Air Sampling," by Matthew Luckiesh and A. H. Taylor. 4 p.m.-Council meeting.

#### National Warm Air Heating and Air Conditioning Association Program

#### Wednesday, Jan. 29

9. a.m.—Registration (Hotel Cleveland). 10 a.m.—"On The Threshold of Opportunity." Frank E. Mehrings, president. 10:30 a.m.—"Foreman Management 10:30 a.m.—"Foreman . . . Management. Team Mates or Bargaining Units," H. J. Post, The National Association of Fore-

man. 11 a.m.—"Our New Research Residence," Frank L. Meyers, chairman, research

advisory committee.

11:15 a.m.—"What The Indoor Comfort
Program Means To Dealers," Hugh
Thompson, chairman, dealers committee.

11:30 a.m.—"What The Association Is
Doing For Wholesalers and Distributors,"

A M Verys chairman, inhers committee. A. M. Vorys, chairman, jobbers committee. 11:45 a.m.—Election of officers and members of the board of directors.

12:30 p.m.—Luncheon. Guest speaker: Allen W. Rucker, president, Tool Owners

2:15 p.m.—"Results of Publicity, Merchandising and Educational Activities," J. R. Scott, chairman, publicity and merchandising committee.

"Publicity and Promotion," E. R. Preble vice president, Griswold-Eshleman Co. "Demonstration of Indoor Comfort Conferences for Dealers," E. L. Sylvester, vice president, Florez, Inc.

"How To Plan For Indoor Comfort Conferences," G. A. Voorhees, application engineering director.

Summarization by F. E. Mehrings, president; J. R. Scott, chairman.

#### Thursday, Jan. 30

9:30 a.m.—"New Warm Air Research Residence," R. W. Roose, special research assistant, University of Illinois.

10 a.m.—"Furnace Blower Research, A New Investigation," N. A. Buckley, oecial research assistant, University of Illinois.

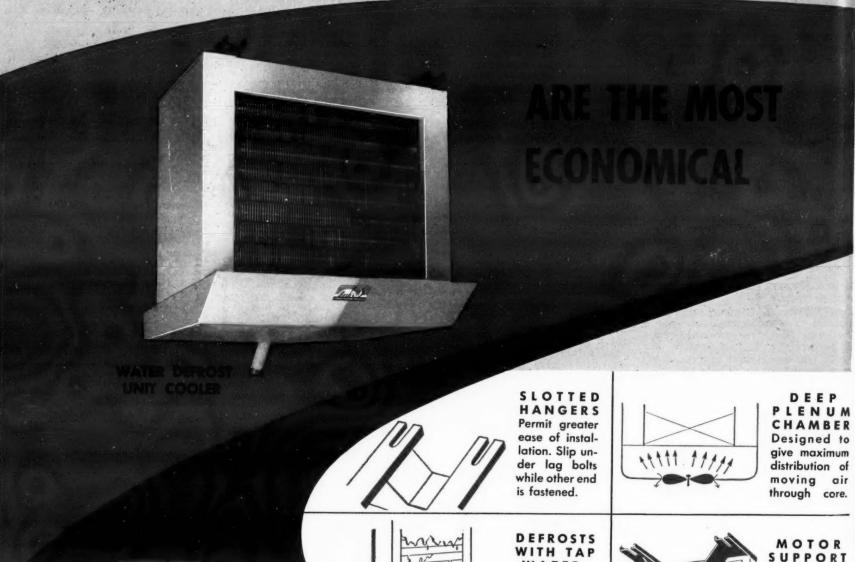
10:30 a.m.—"Resistance of Branch Takeoff Fittings in Extended Plenur." S. Konzo," special research professor University of Illinois.

11:15 a.m.—Committee reports: 2 a.m.

11:15 a.m.—Committee reports: Meyers, chairman, research advisory committee; W. D. Redrup, chairman, in tallation codes committee; Prof. L. G. Hiller, chairman, technical education committee; Cury A. Voorhees, application, engineering Guy A. Voorhees, application engin ering

2:30 p.m.-Joint meeting with ASHVE





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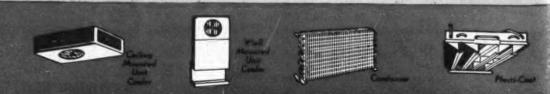
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